



EEAC Conference



- The Business Case for Energy Efficiency -



Nuno Ribeiro da Silva

Évora, October 12th 2007

Contents

- 1. Introduction – A Global Context for the Energy Issue in Europe**
- 2. Energy Efficiency – Where we are now**
- 3. The Business Case for Energy Efficiency in Europe**

Contents

- 1. Introduction – A Global Context for the Energy Issue in Europe**
- 2. Energy Efficiency – Where we are now**
- 3. The Business Case for Energy Efficiency in Europe**

We are facing today a grave imbalance between primary energy supply and demand

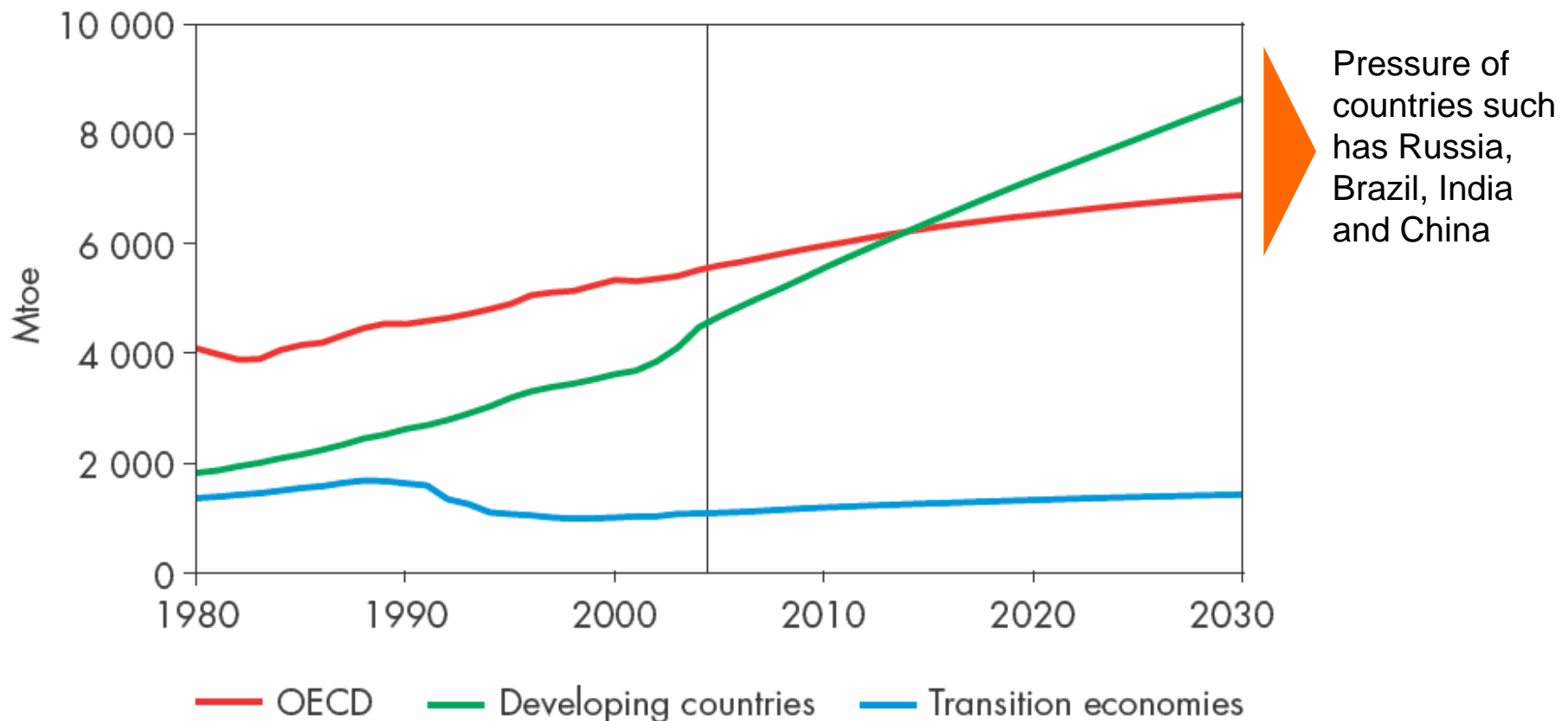
- 1/3 of the population has virtually no access to primary energy
- Only some 1/6 of world population has a structured access to energy supply, without repressed demand
- With the industrialization of the other 1/3 of the population, we fear for the availability of resources to meet their needs and a massive investment in infrastructures is in hand



The 8 to 10 million barrels/day of the decades 80/90 has disappeared

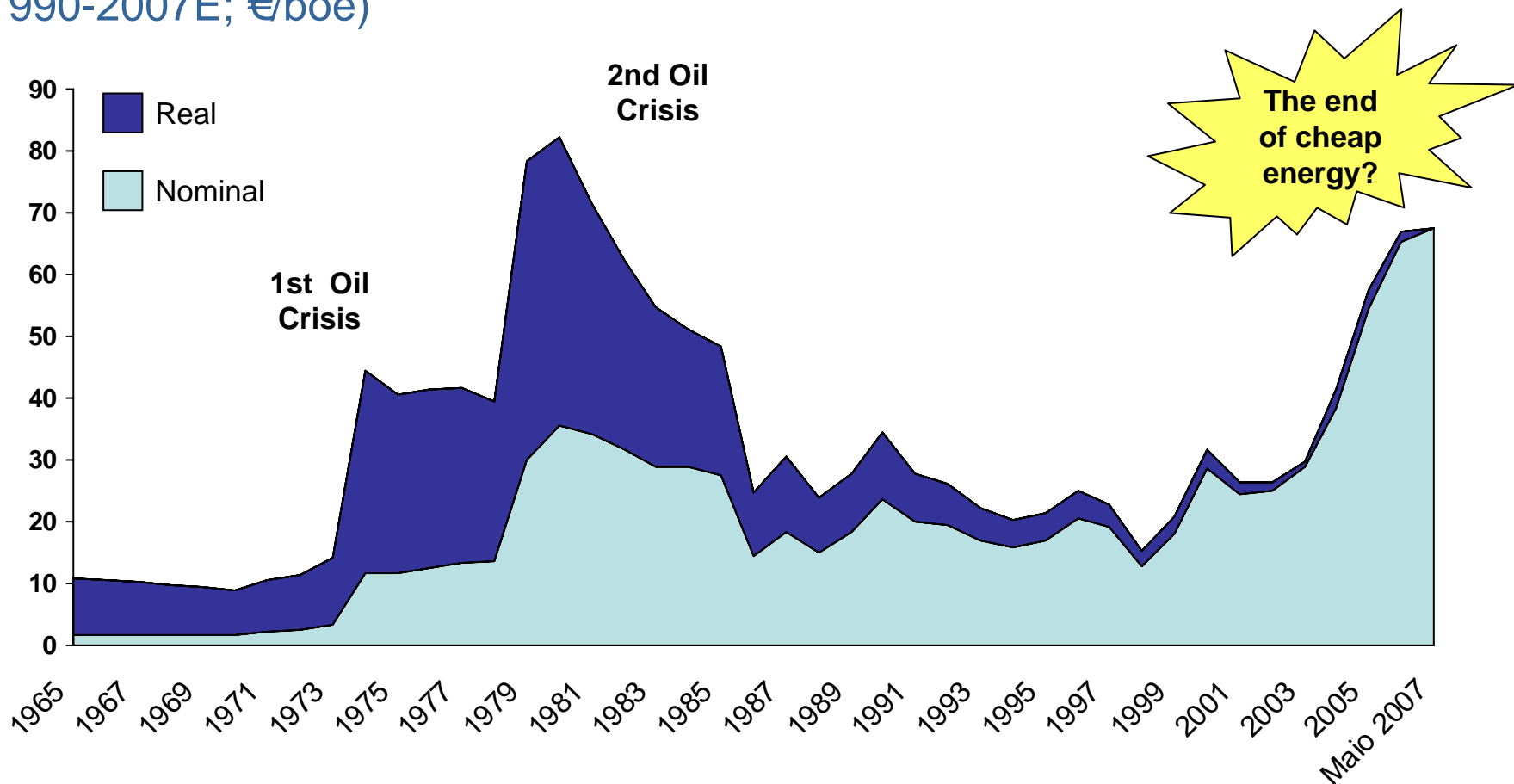
Previsions say that in 20 years the developing countries will increase as much as four times their needs in primary energy

Energy needs by region
(1980-2030E; Mtoe)



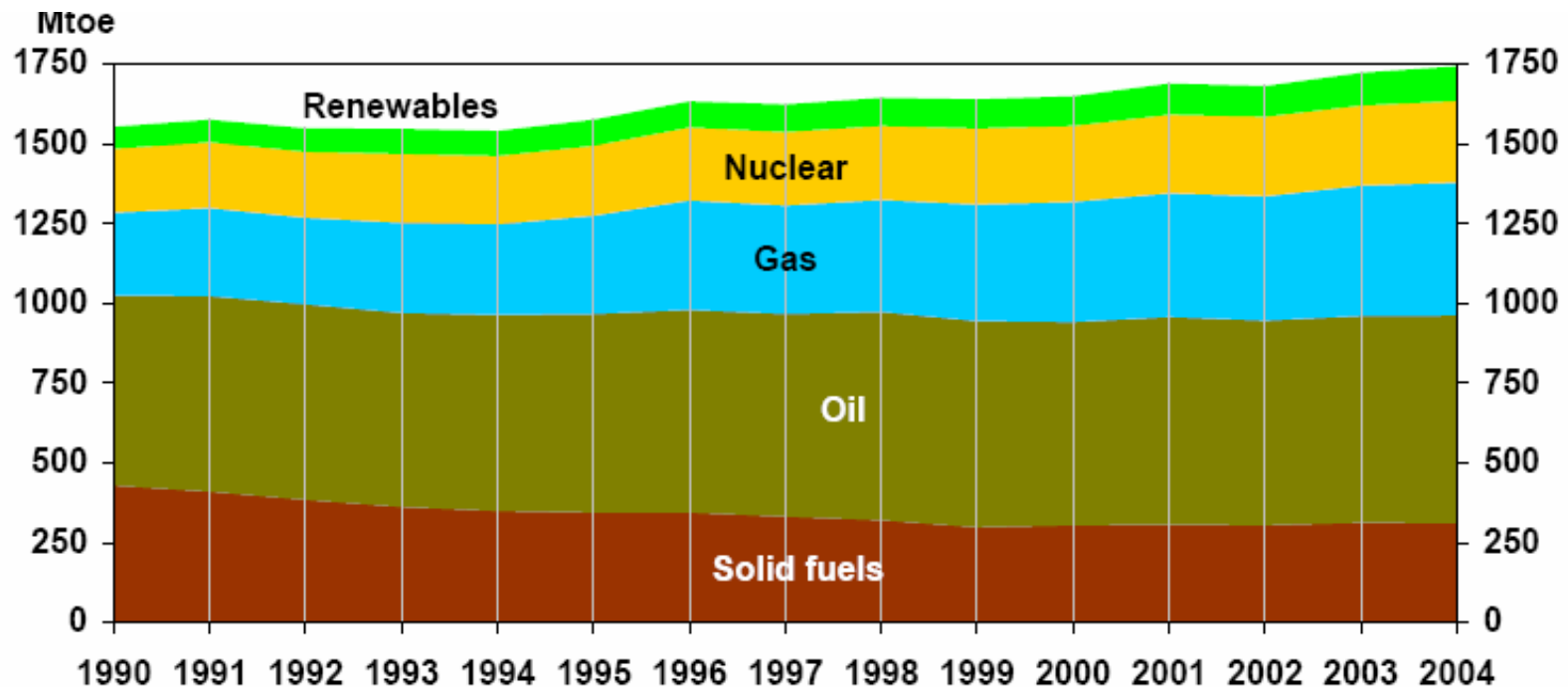
The increase on the demand bring us a new state of affairs – The end of cheap energy and this time in a structural way

Oil price evolution
(1990-2007E; €/boe)

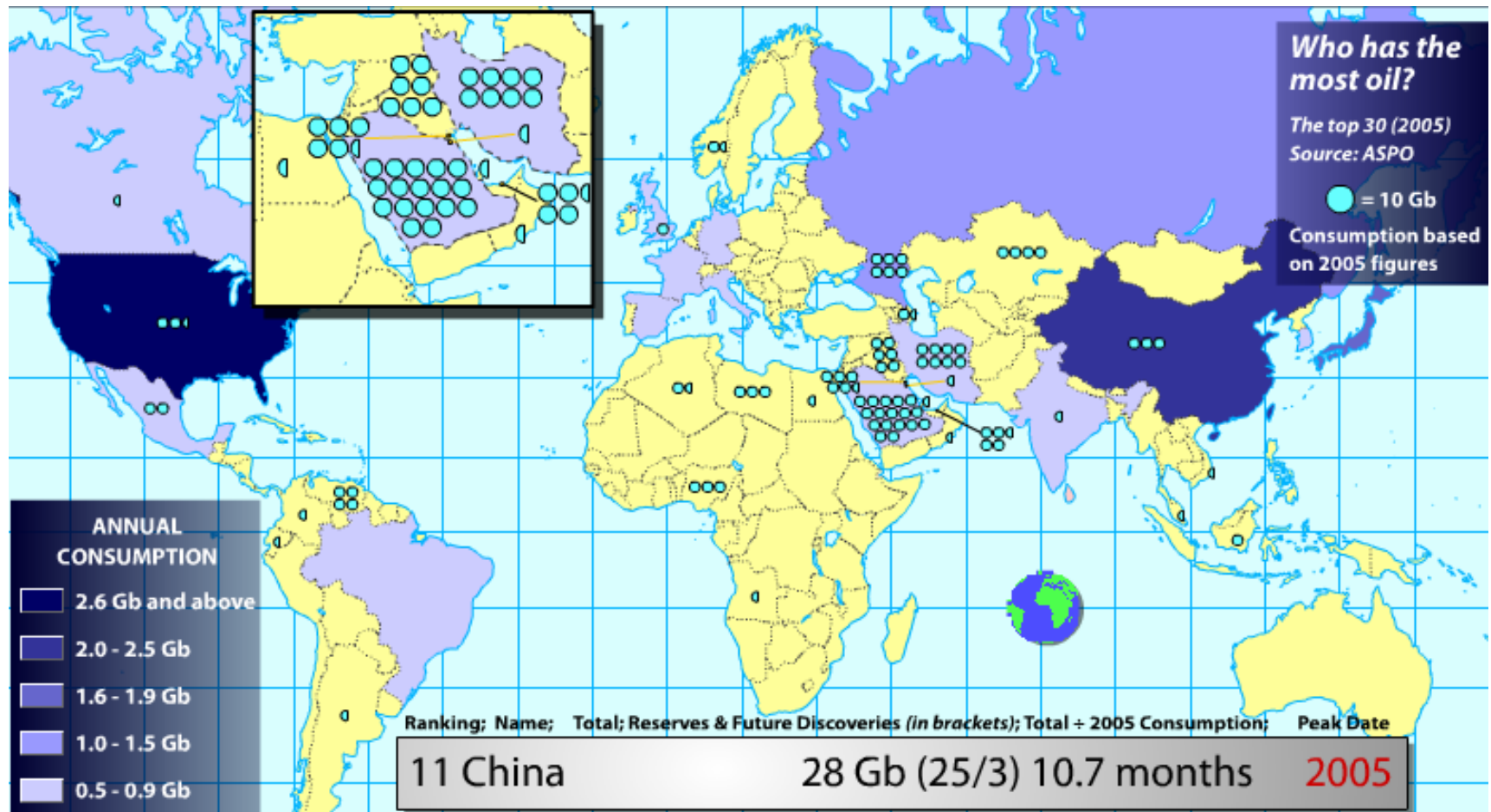


The European Union continues to depend, today, in more than 40% of oil, and in 25% of natural gas, to supply its energy consumption

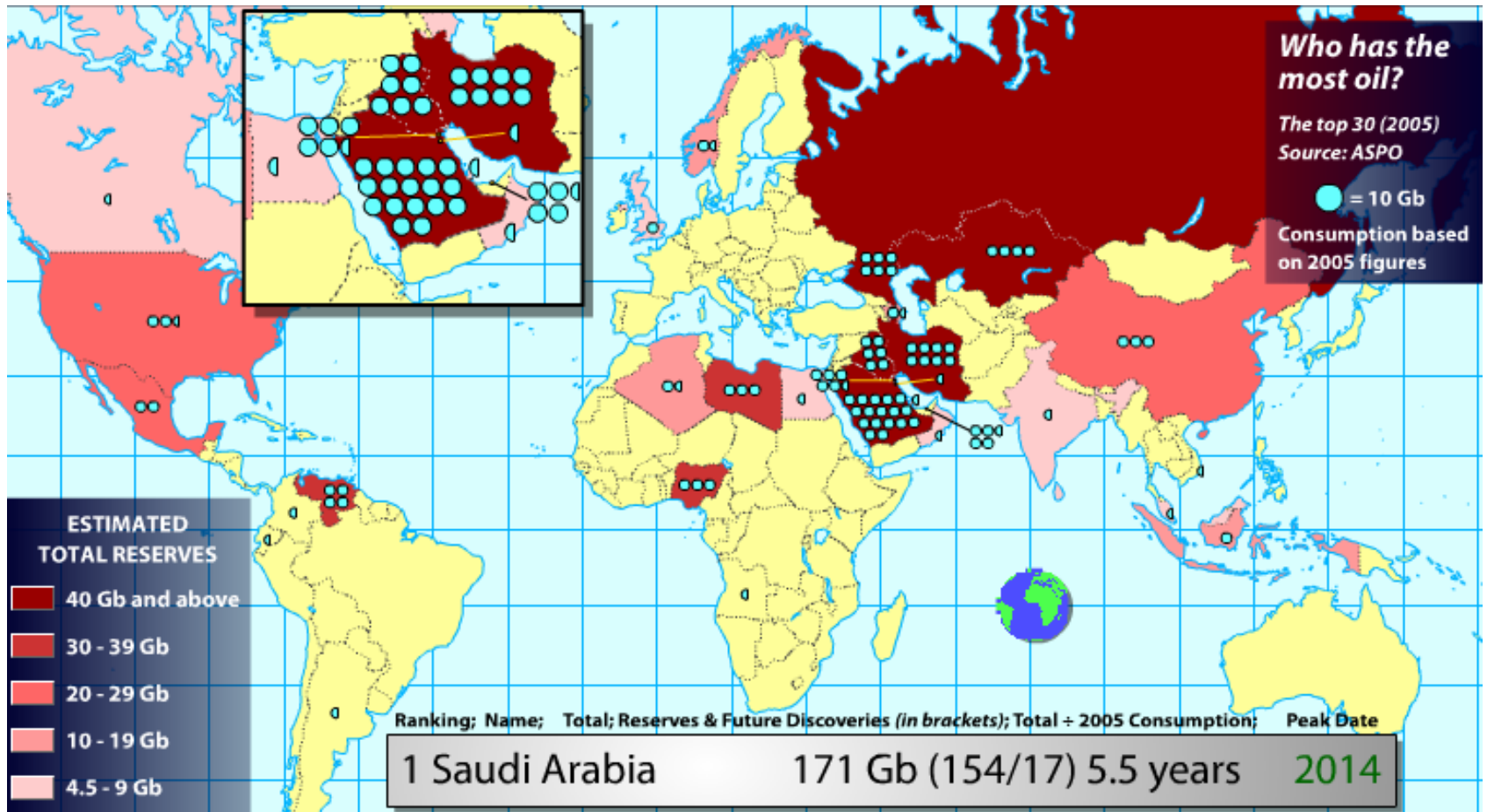
European Union primary energy consumption (1990-2004)



But despite being represented on the map of the major consumers of oil...

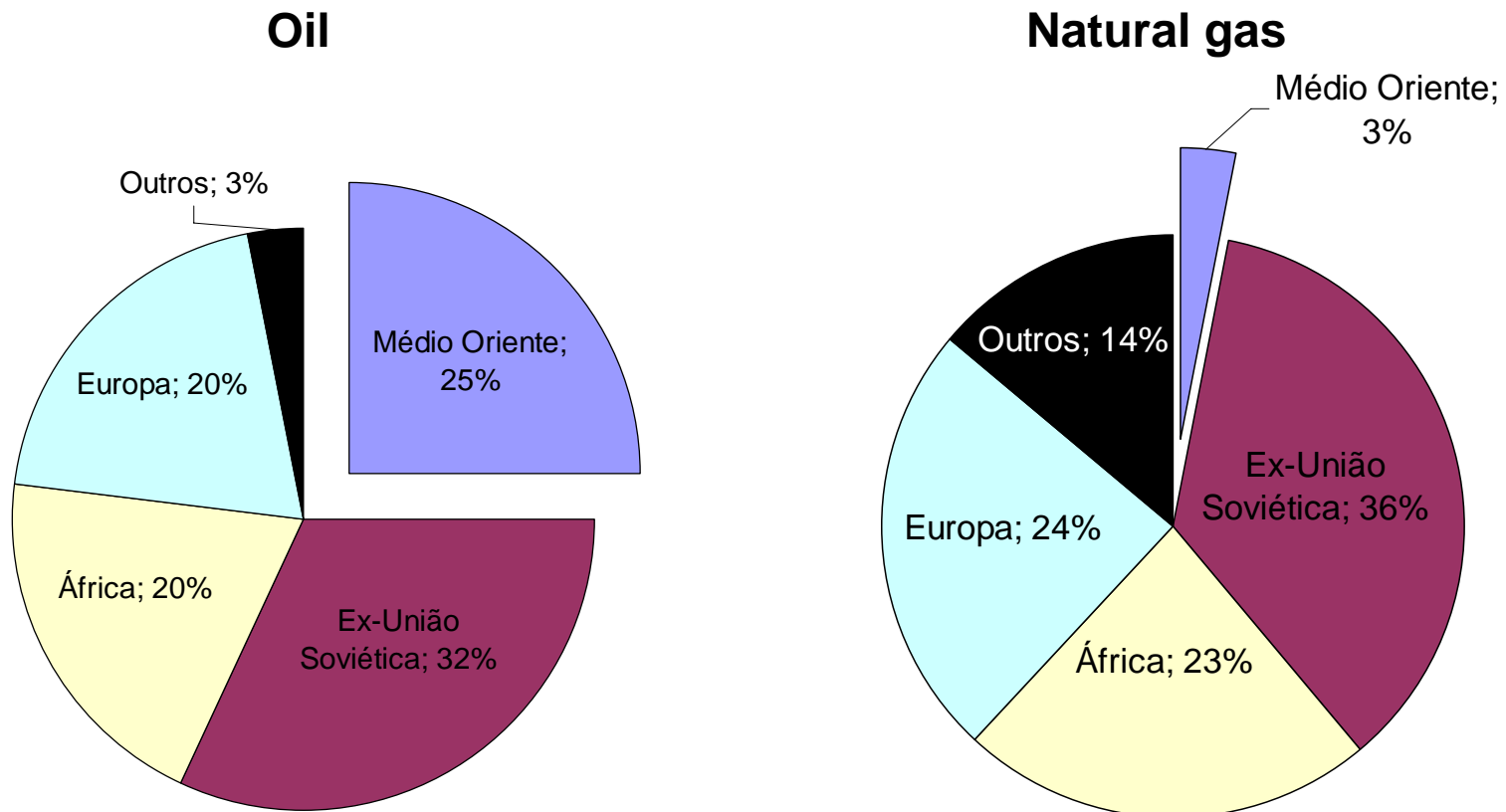


... it does not take a significant part on the map of world oil reserves, dominated in great measure by the Middle East



In fact, Europe depends in more than 70% of its consumption of oil and natural gas coming from abroad

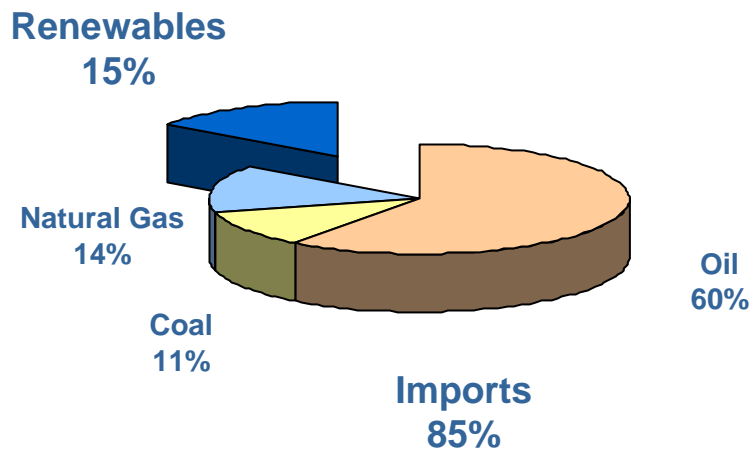
Source of oil and natural gas consumed in Europe (2005)



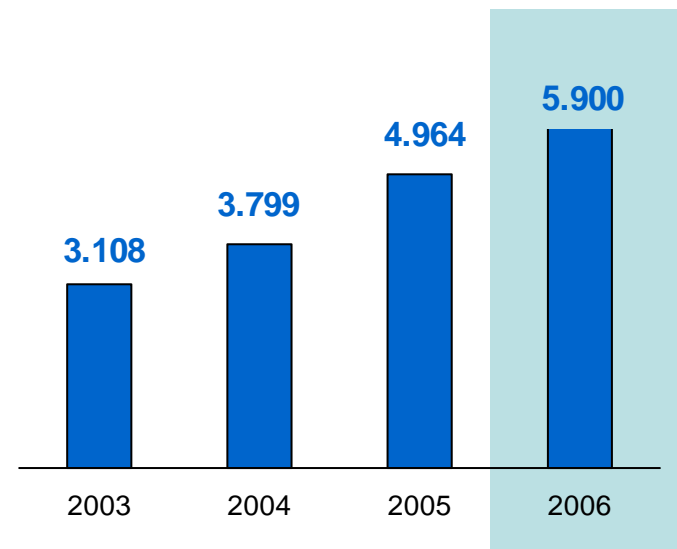
In this conditions, our total energy bill, especially in smaller countries such as Portugal, with strong external dependence, tends to worsen

Portuguese energy situation

**Primary Energy Sources
(2005; tep)**



**Energy imports balance
(2003-06; M€)**



Faced with this scenario, Europe will have to balance three, however conflicting, objectives

Affordable energy supply for our businesses and families

Competitiveness

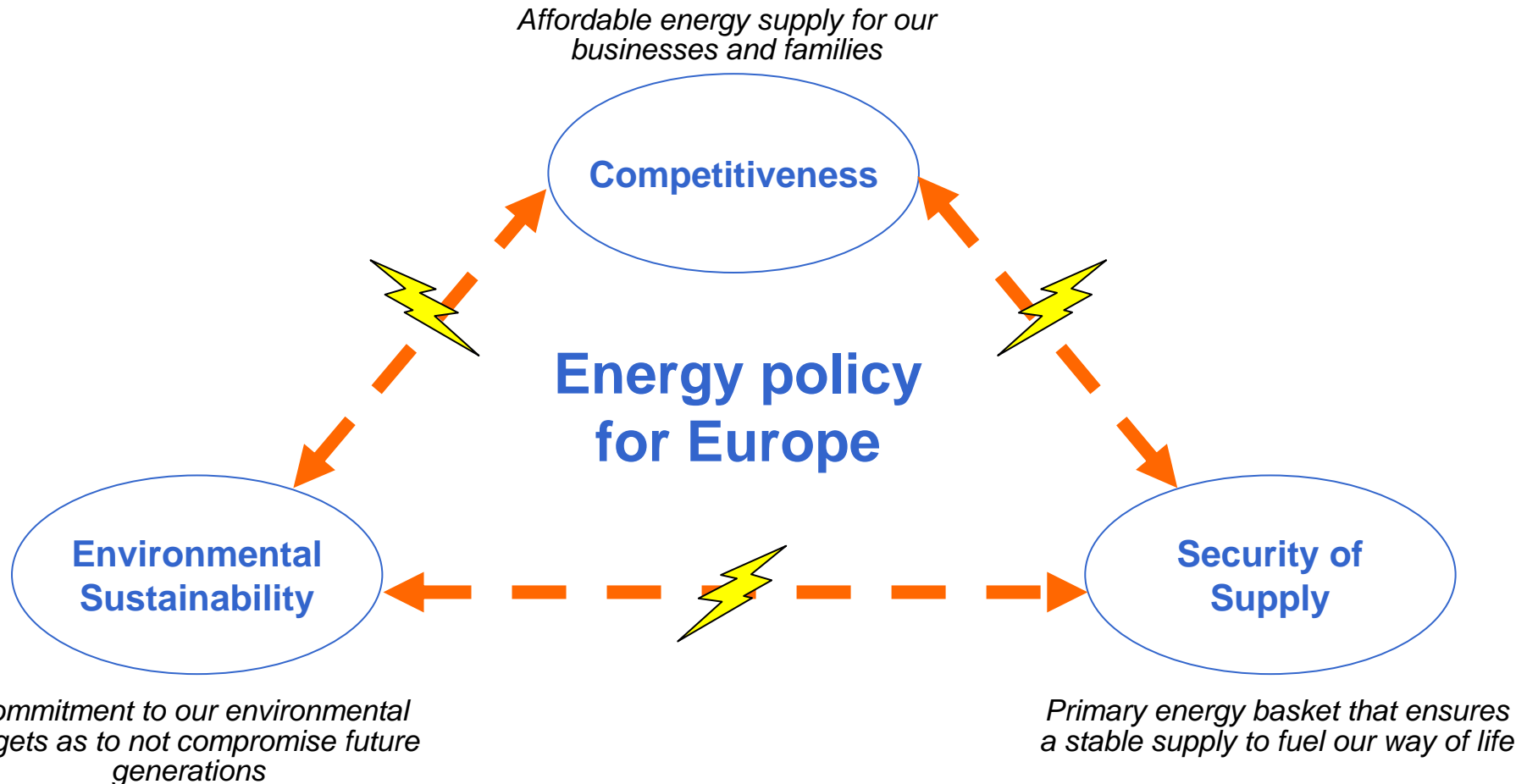
Energy policy for Europe

Environmental Sustainability

Security of Supply

Commitment to our environmental targets as to not compromise future generations

Primary energy basket that ensures a stable supply to fuel our way of life



Contents

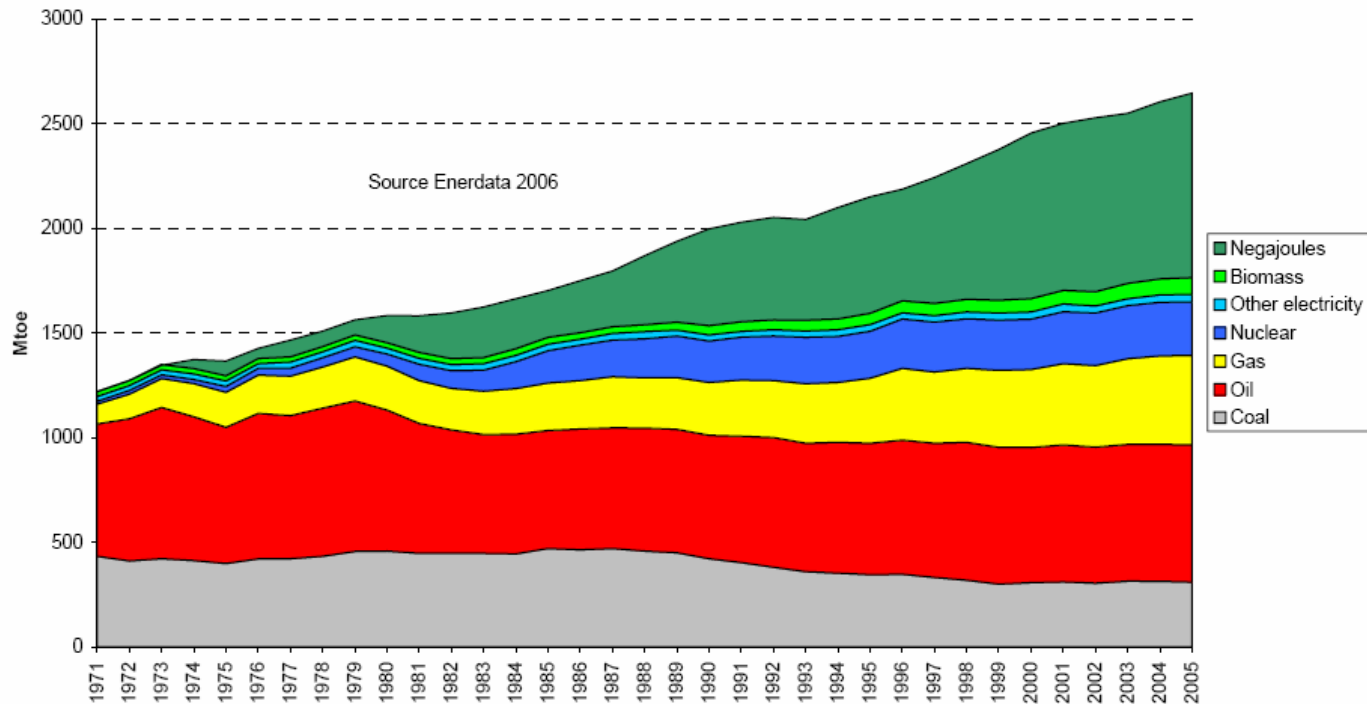
1. Introduction – A Global Context for the Energy Issue in Europe

2. Energy Efficiency – Where we are now

3. The Business Case for Energy Efficiency in Europe

Over the last 30 years, Europe has achieved an impressive evolution whereas energy efficiency is concerned...

Evolution of European Energy Consumption by Energy Source
 - Role of the “negajoules” (Energy Efficiency increase)



Trough continuous improvements in technology and behavior, Europe has achieved a dramatic improvement in energy efficiency

... However, we will still be wasting some 20%+ of our energy consumption over the next decades even considering BAU technology advancements

- The **Energy Transformation Sector**, accountable for 1/3 of our energy consumption, has as average 40% efficiency today, but new technologies can bring us up to as much as 60% in the future
- **Household consumption**, offer a potential of over 25% of energy use through the use alone of retrofitted wall and roof insulation in residential buildings and through the use of improved appliances and other energy-using equipment
- **Tertiary consumption** offer a potential of up to 30% through the use of improved energy management systems in commercial buildings
- **Industrial consumption**, accountable for about 20% of total consumption, has an overall potential estimated to be around 25%, where peripheral equipment such as motors, fans and lighting offer the most important savings potential
- **Transports** also offer an important energy saving potential of about 25%, where the change to other modes of traffic play an important role



**Combined
overall
saving
potential of
20%+ over a
Business as
Usual
Scenario
through 2020**

Contents

- 1. Introduction – A Global Context for the Energy Issue in Europe**
- 2. Energy Efficiency – Where we are now**
- 3. The Business Case for Energy Efficiency in Europe**

If we have been so successful in improving our efficiency in the past, why should we pursue a target of an additional 20% reduction in energy consumption?

A **For competitiveness reasons** – The objective implies the virtual rethinking of every technological aspect of our lives, from our domestic appliances, to the way we build our houses and run our businesses, and creates the stemming conditions, through innovation, for Europe's technological leadership

B **For environmental reasons** – The proposed reduction represents a saving of up to 750 Mton/year of CO₂ emissions, more than double of our Kyoto targets until 2012

C **For security of supply reasons** – An extra reduction of 20% of our total energy consumption will represent, by 2020, a yearly saving of up to 390 Mtoe, reducing our external energy needs in over 100 bn€

In order to maintain our way of life, in a world with evermore questions on the energy supply/demand balance, the way we use energy is critical

$$\text{Product/Service} = \text{Energy} + \text{Appliance}_{\text{efficiency}} \text{ (Raw Matter)}$$

- **With primary energy prices going up with increasing demand and geo-political instability, this is a variable we can hardly have under complete control**

- **On the other hand, we can have a positive control over the efficiency with which we use energy**
- **Moreover, if we neglect to act now our different Industries and Service Providers might find themselves with problems much the same as those the American Auto industry faces today**

If we have been so successful in improving our efficiency in the past, why should we pursue a target of an additional 20% reduction in energy consumption?

A For competitiveness reasons – The objective implies the virtual rethinking of every technological aspect of our lives, from our domestic appliances, to the way we build our houses and run our businesses, and creates the stemming conditions, through innovation, for Europe's technological leadership

B **For environmental reasons** – The proposed reduction represents a saving of up to 750 Mton/year of CO₂ emissions, more than double of our Kyoto targets until 2012

C For security of supply reasons – An extra reduction of 20% of our total energy consumption will represent, by 2020, a yearly saving of up to 390 Mtoe, reducing our external energy needs in over 100 bn€

If we have been so successful in improving our efficiency in the past, why should we pursue a target of an additional 20% reduction in energy consumption?

A For competitiveness reasons – The objective implies the virtual rethinking of every technological aspect of our lives, from our domestic appliances, to the way we build our houses and run our businesses, and creates the stemming conditions, through innovation, for Europe's technological leadership

B For environmental reasons – The proposed reduction represents a saving of up to 750 Mton/year of CO₂ emissions, more than double of our Kyoto targets until 2012

C **For security of supply reasons** – An extra reduction of 20% of our total energy consumption will represent, by 2020, a yearly saving of up to 390 Mtoe, reducing our external energy needs in over 100 bn€



endesa portugal

**Quinta. da Fonte, Ed. Dom Manuel I, piso 0, Ala B
2770-203 Paço d'Arcos - Portugal
Tel: (+351) 21 110 27 00 Fax: (+351) 21 110 27 27**

www.endesaportugal.pt