Source: Directorate-General for Energy

Tratado de Paris 1951

"A este fin, los ministros han acordado en los siguientes objetivos: poner más ... energía abundante a un precio más barato a disposición de las economías europeas ... '

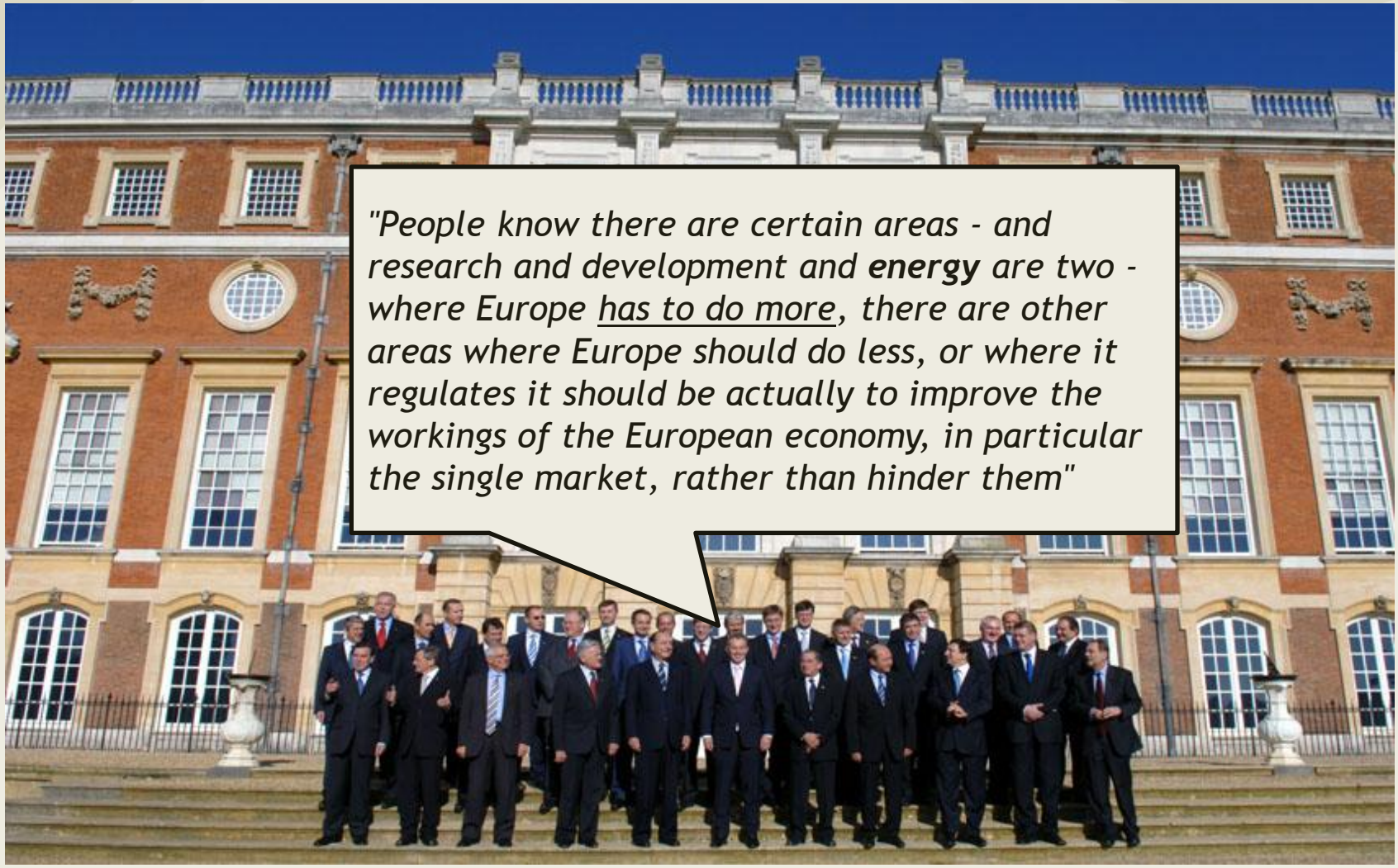
Tratado Euratom 1957

First important directive
Oil stocks directive from 1968

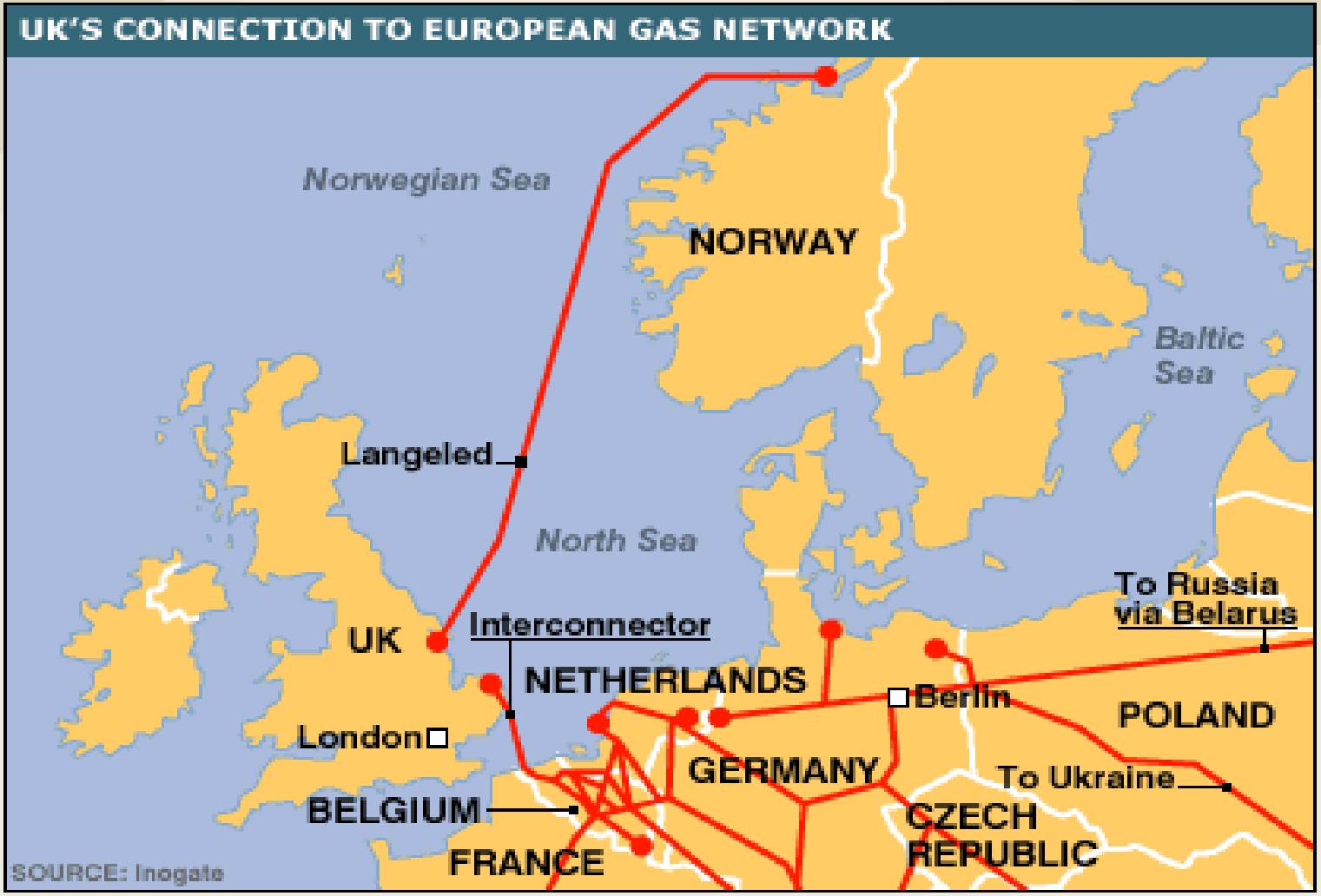
- Council Directive 68/414/EEC of 20 December 1968
- Recognizes the increasing dependence on foreign imports and the severity of a "difficulty" that affect security of supply.
- Without defining what was a "difficulty“
- After the crisis of 1973-1974 the international energy agency is created.
- Member States have an obligation to maintain emergency reserves equivalent to at least 90 days of net oil imports

Energy Green Paper (2000)

El milagro de Hampton Court (2005)



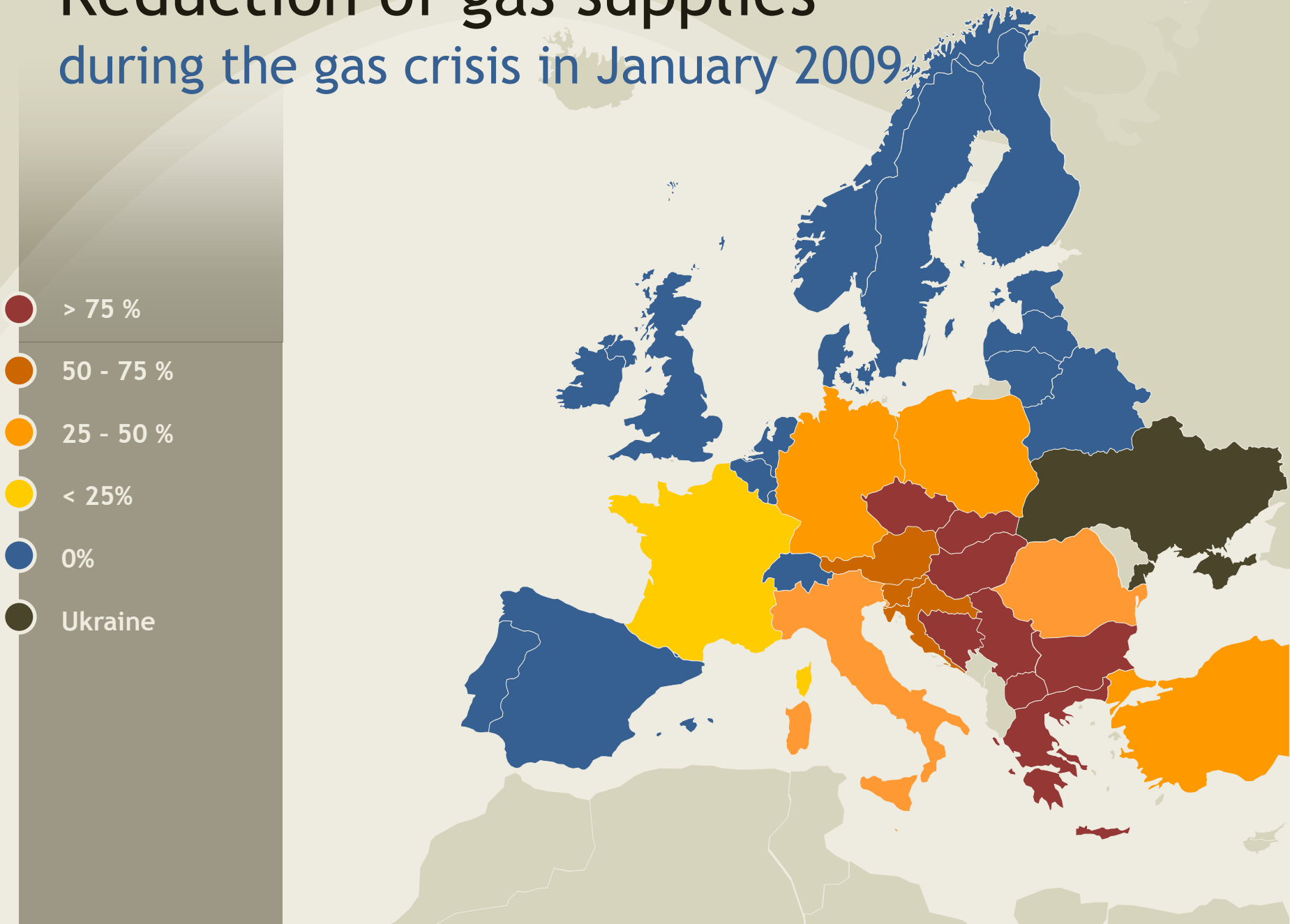
Gas crisis in UK in 2005



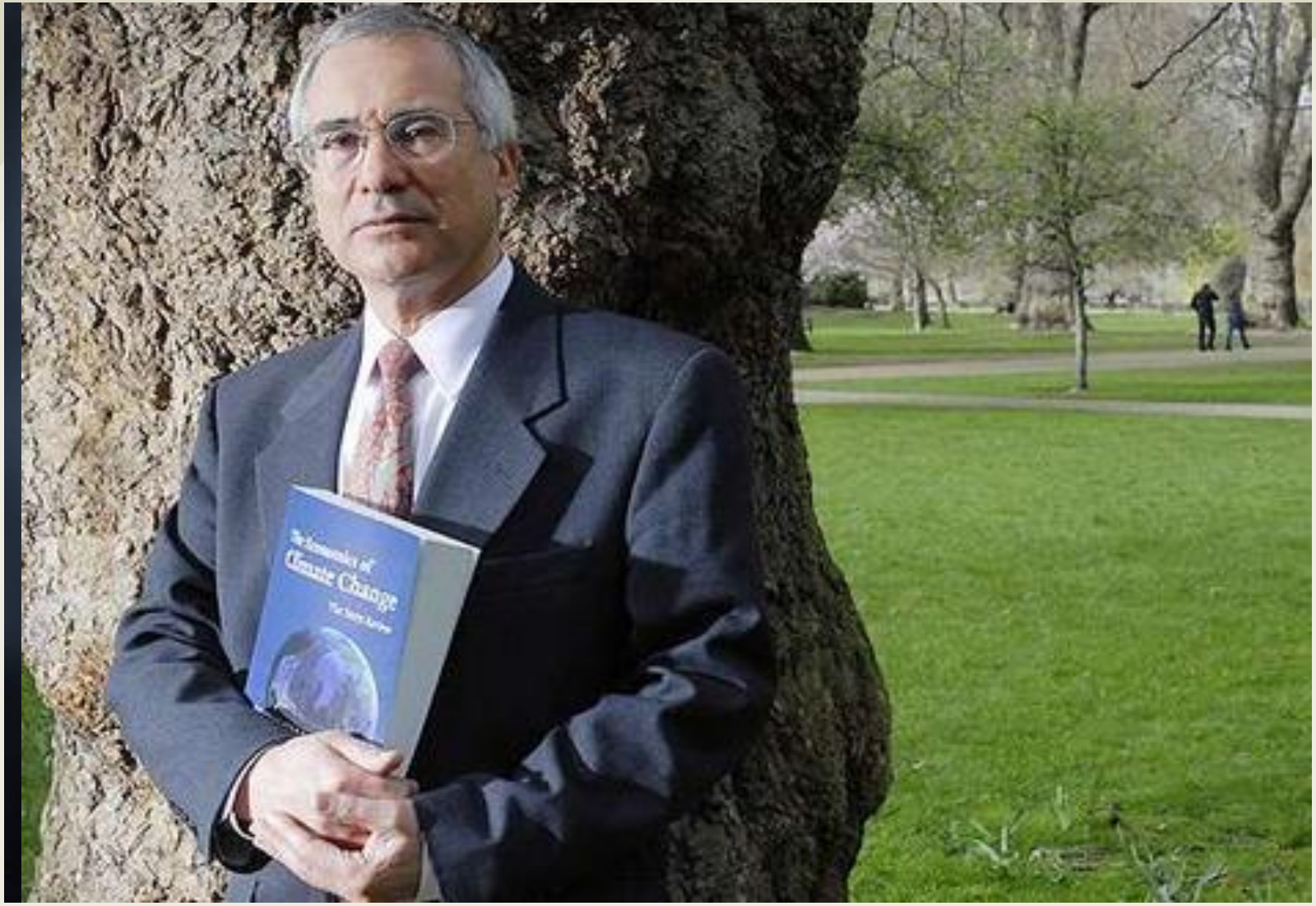
First Ukraine gas crisis 2005-2006

Reduction of gas supplies

during the gas crisis in January 2009



Climate change

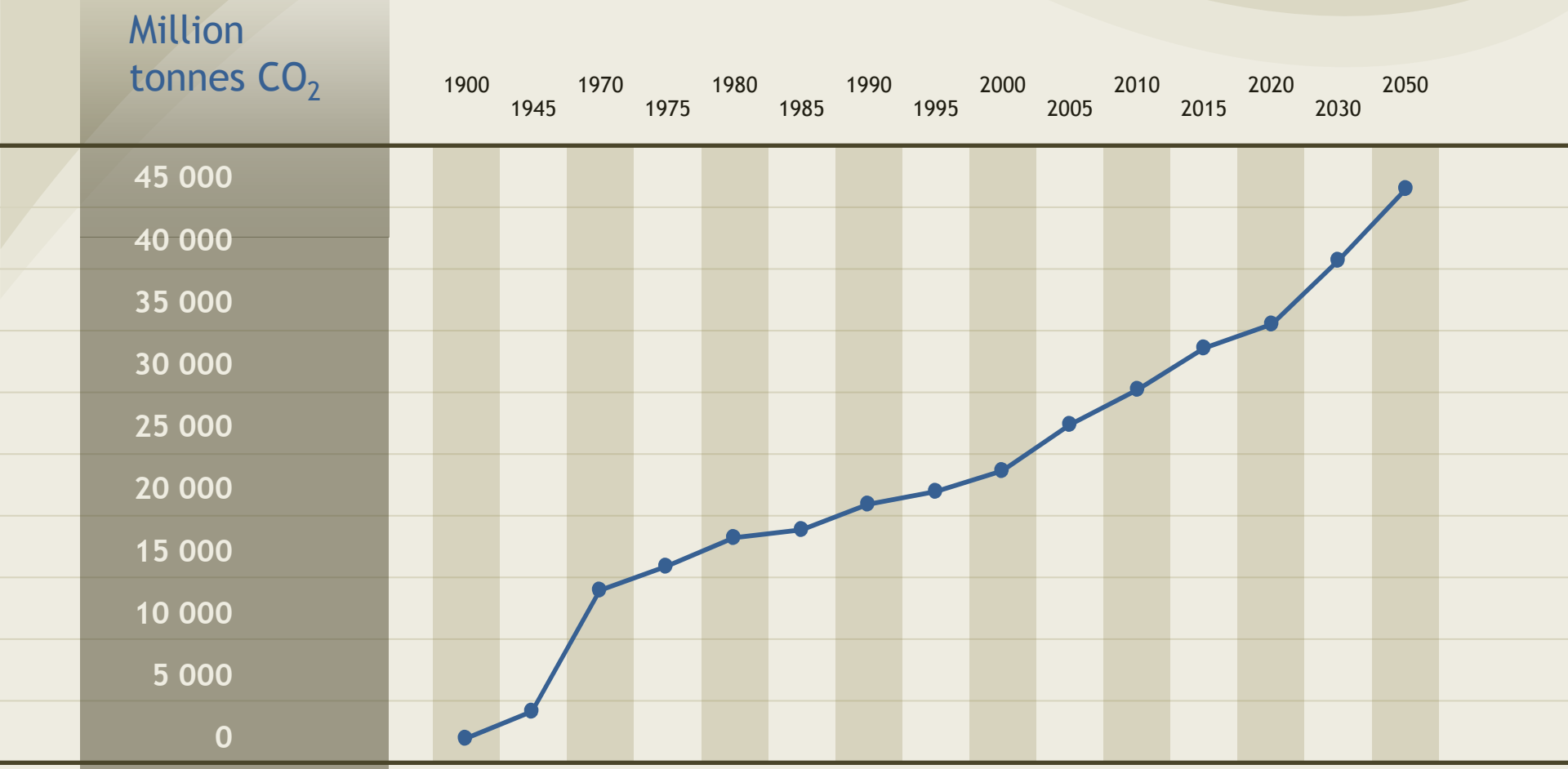


Energy in the treaty of Lisbon

- Lisbon Treaty is also the first EU Treaty to stablish a legal basis to Energy (Art 194) and aims to ensure:
  - The functioning of the energy market
  - Security of Supply
  - Promote energy efficiency and energy saving
  - Promote the development of new and renewable forms of energy
  - Promote the interconnection of energy networks.

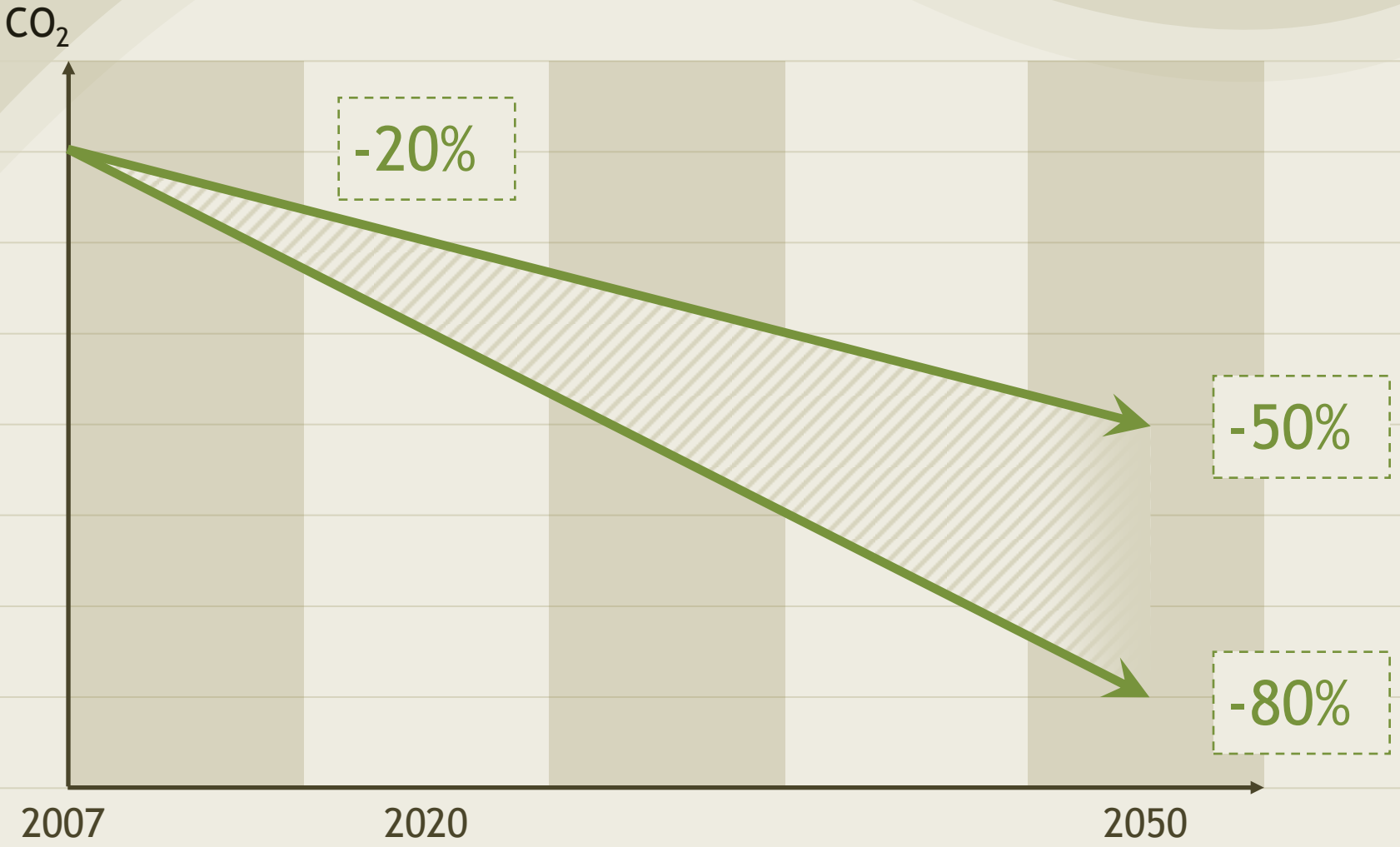

Security of supply
Competitiveness
Sustainability

Global CO_2 Emissions
From Energy Consumption



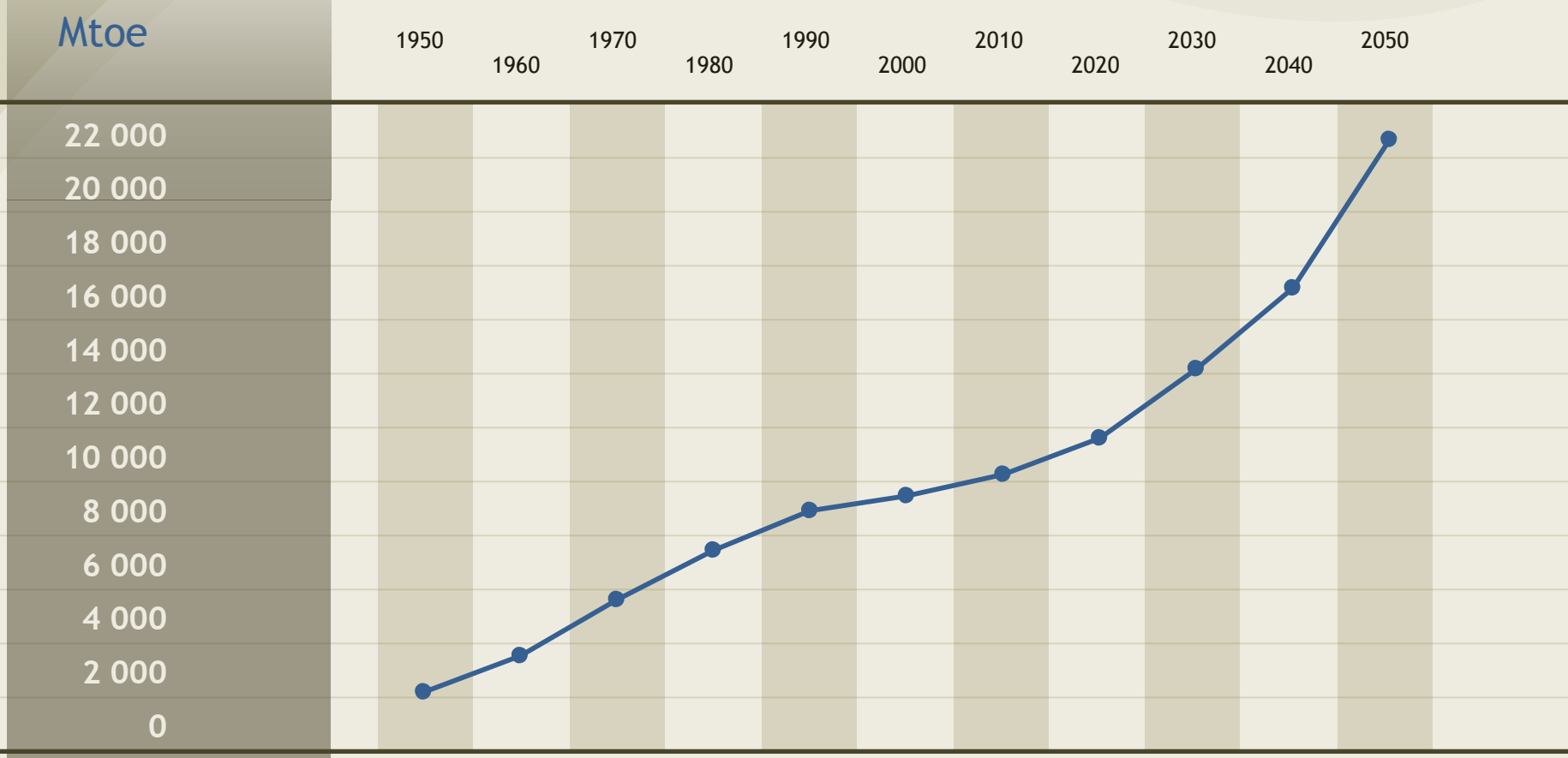
IEA: CO_2 emissions from fossil fuel combustion, 2006: from 1975 onwards
Carbon dioxide information analysis center, Oak Ridge National Laboratory, USA: until 1970, growth rates used for linking with IEA data
IEA: World Energy Outlook 2006
European Commission, DG RTD, World Energy Technology Outlook - 2050
(growth rates for extending series to 2050 and for missing years in IEA projections)

CO2 objectives for the EU



World Energy Demand

Total



Total

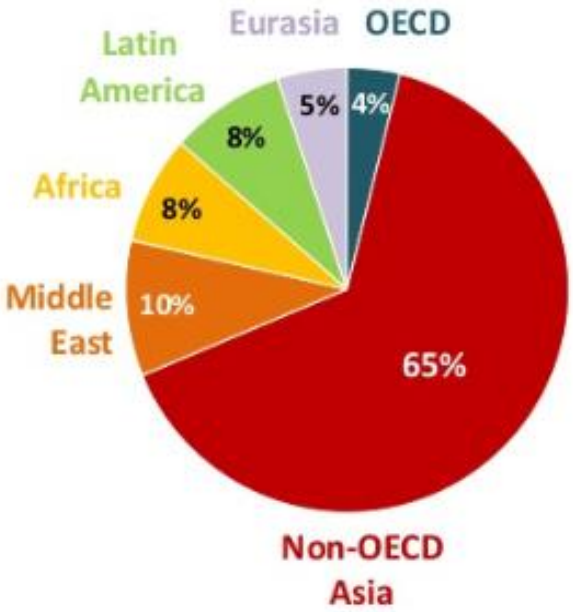
IEA statistical database 1975 - 2000; World Energy Outlook 2006; IEA World Energy Outlook 2006. BP Statistical Review of World Energy (without uncommercial energies): growth rates used for extending time series backwards for 1965 and 1970 as well as for the 2005 number. WETO-H_2 study (DG RTD): growth rates 2050/2030 used for extending IEA time series to 2050

The engine of energy demand growth moves to South Asia

WORLD ENERGY OUTLOOK 2013

Primary energy demand, 2035 (Mtoe)

Share of global growth 2012-2035



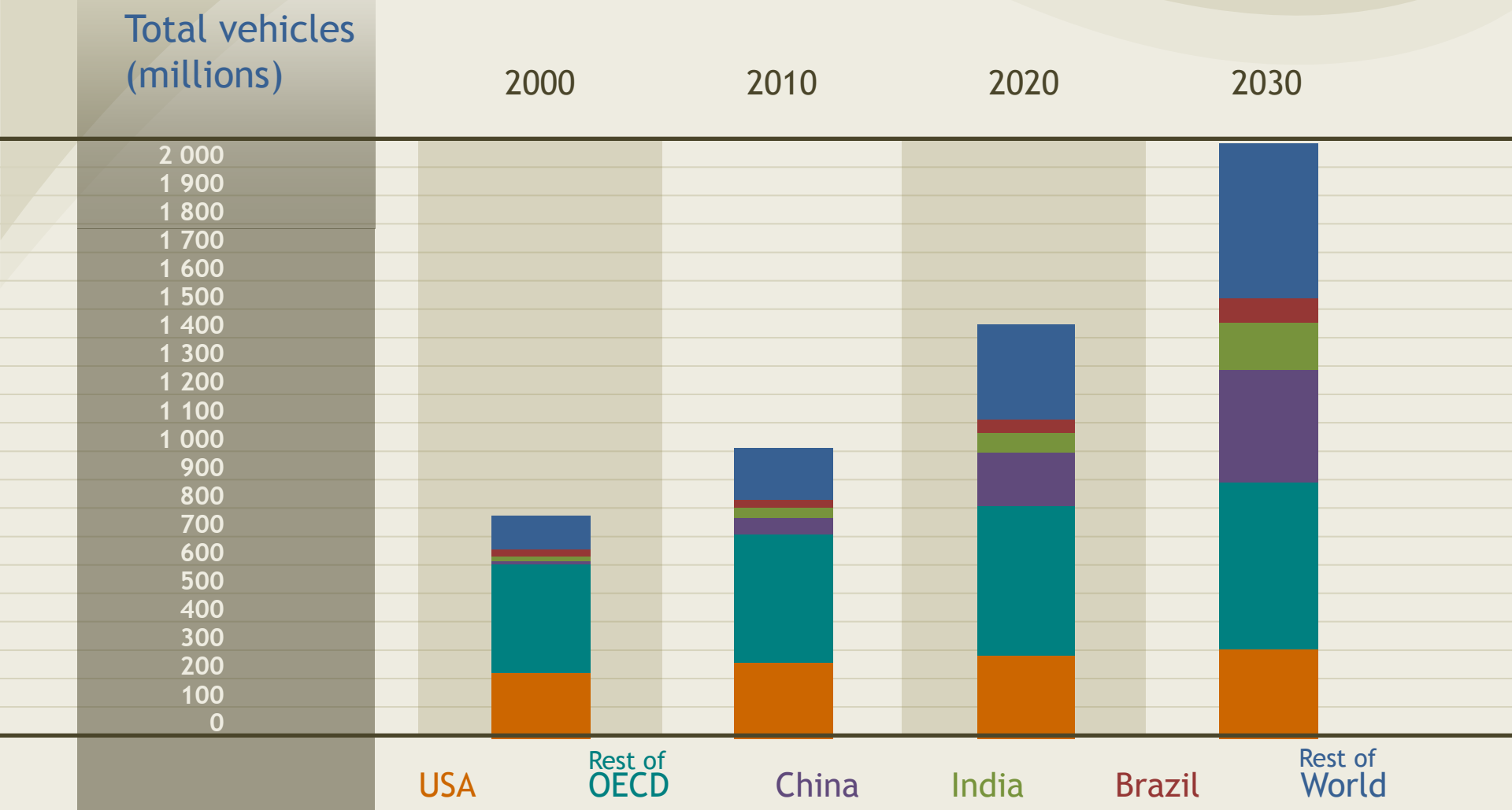
China is the main driver of increasing energy demand in the current decade, but India takes over in the 2020s as the principal source of growth

Population growth
by region

Source: World energy outlook 2008

Cars projection

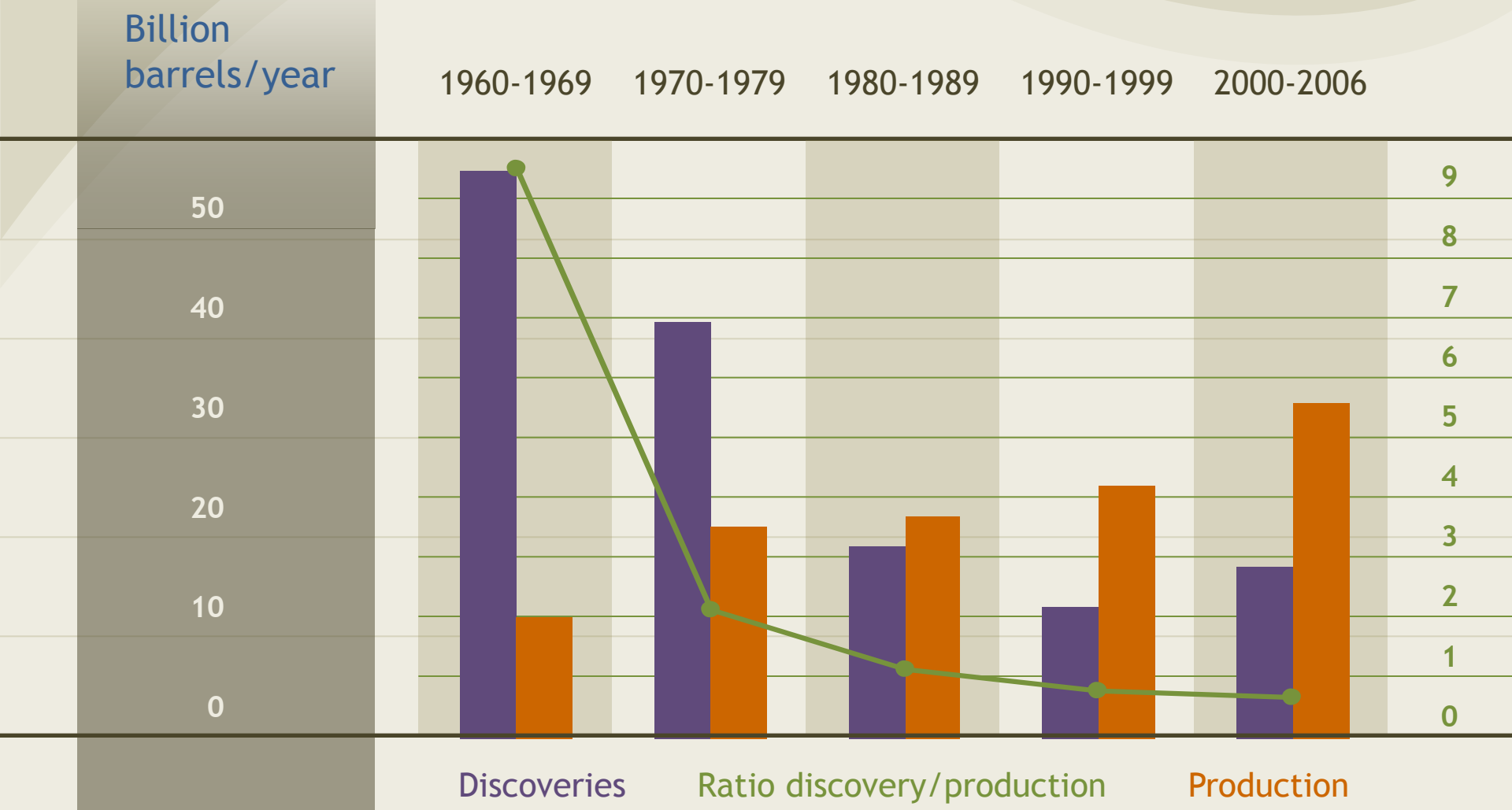
Data on vehicles



Source: Vehicle Ownership & Income Growth, Worldwide: 1960-2030: Joyce Dargay, Dermot Gately & Martin Sommer: January 2007

World oil reserves

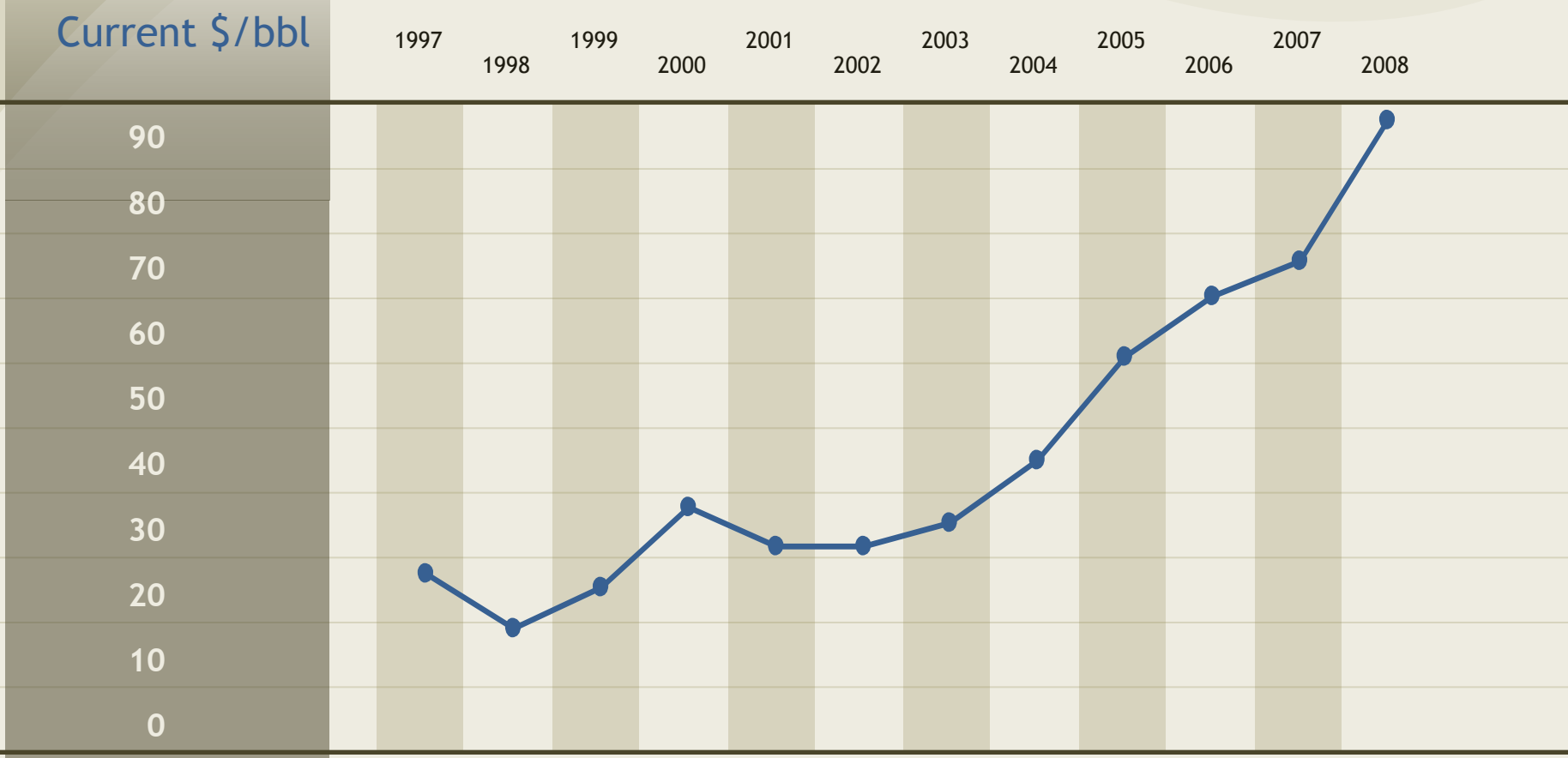
Oil discoveries and production, 1960-2006



Source: World energy outlook 2008

Crude oil prices

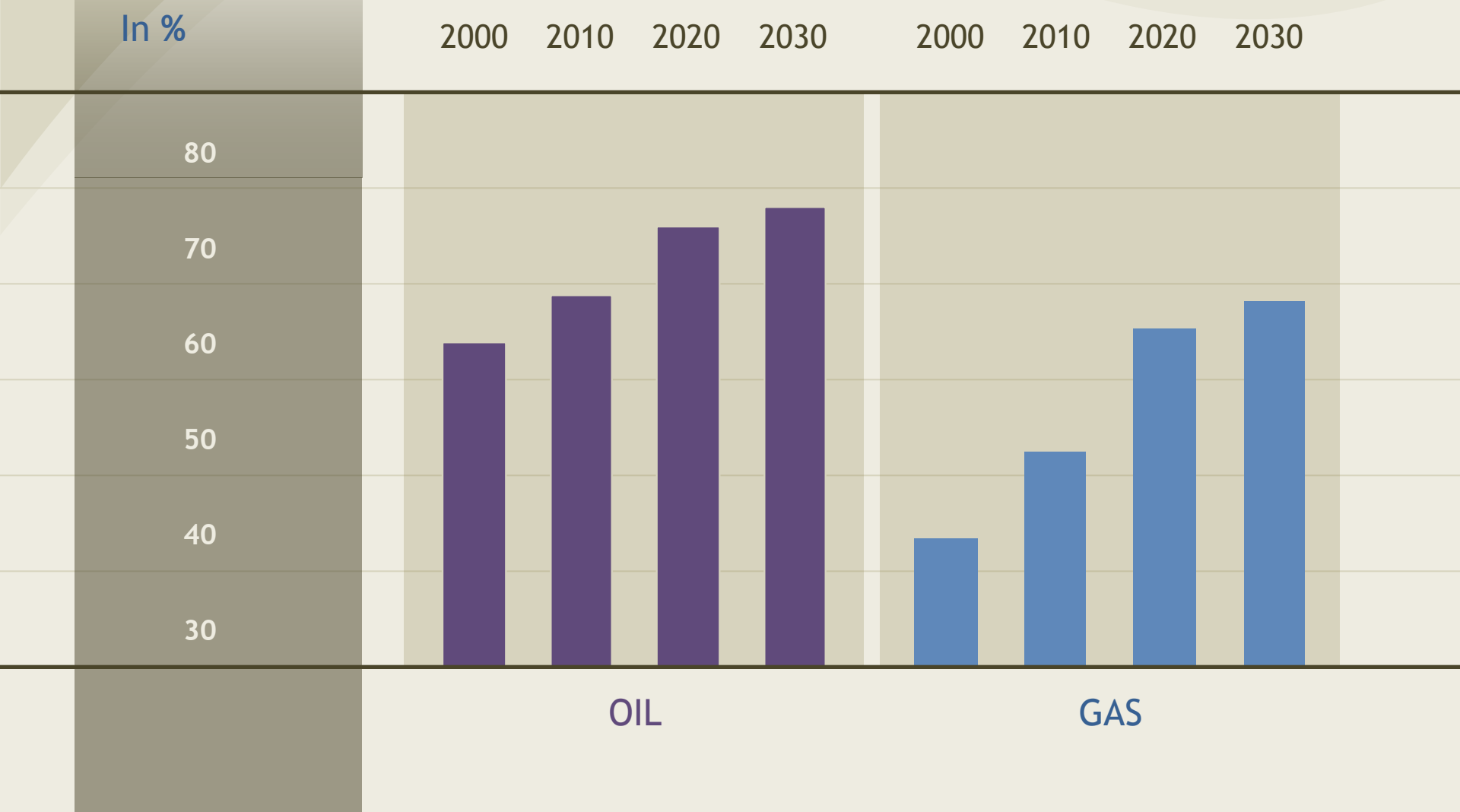
Brent



Source: BP statistical review of world energy full report 2009

EU-27 Baseline Projection

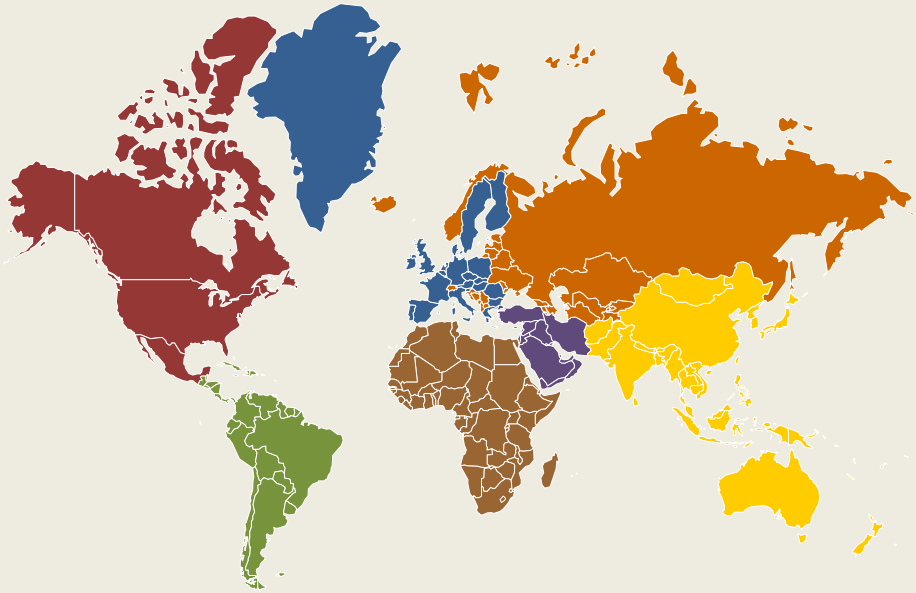
Import Dependency



Proven Oil Reserves
(end of 2008)

Billion barrels

- European Union
- Asia Pacific
- North America
- South & Central America
- Africa
- Russia & other Eurasian countries
- Middle East

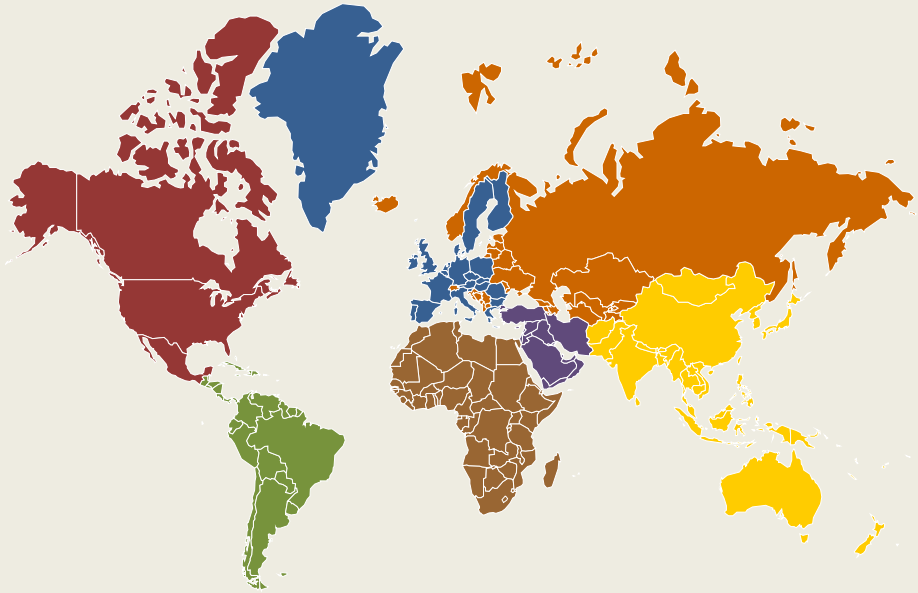


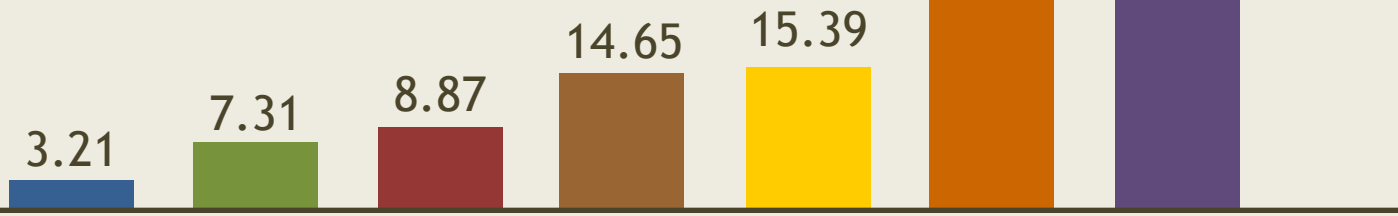
Source: BP statistical review of world energy full report 2009

Proven Gas Reserves
(end of 2008)

Trillion
cubic metres

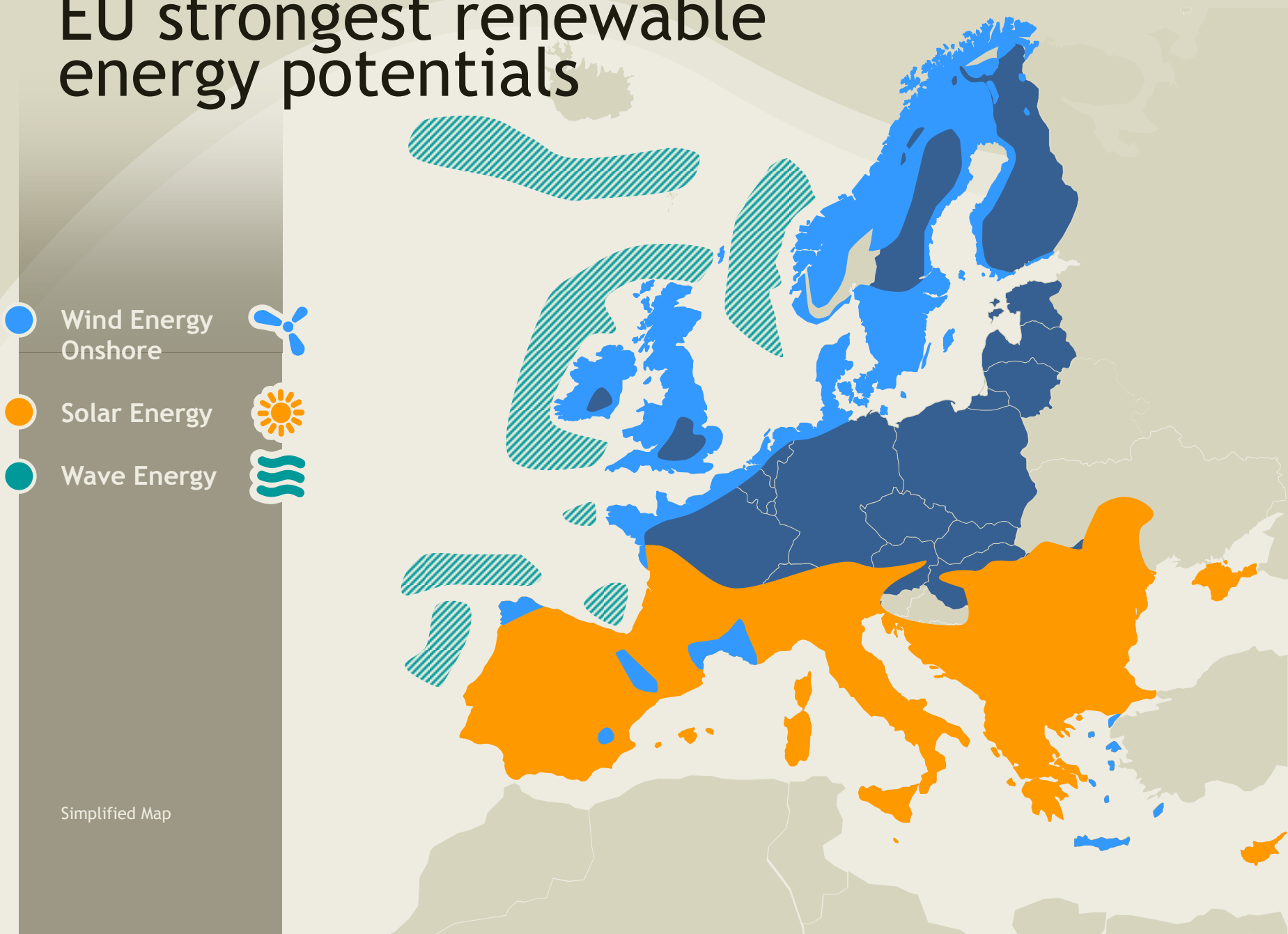
- European Union
- Asia Pacific
- North America
- South & Central America
- Africa
- Russia & other Eurasian countries
- Middle East



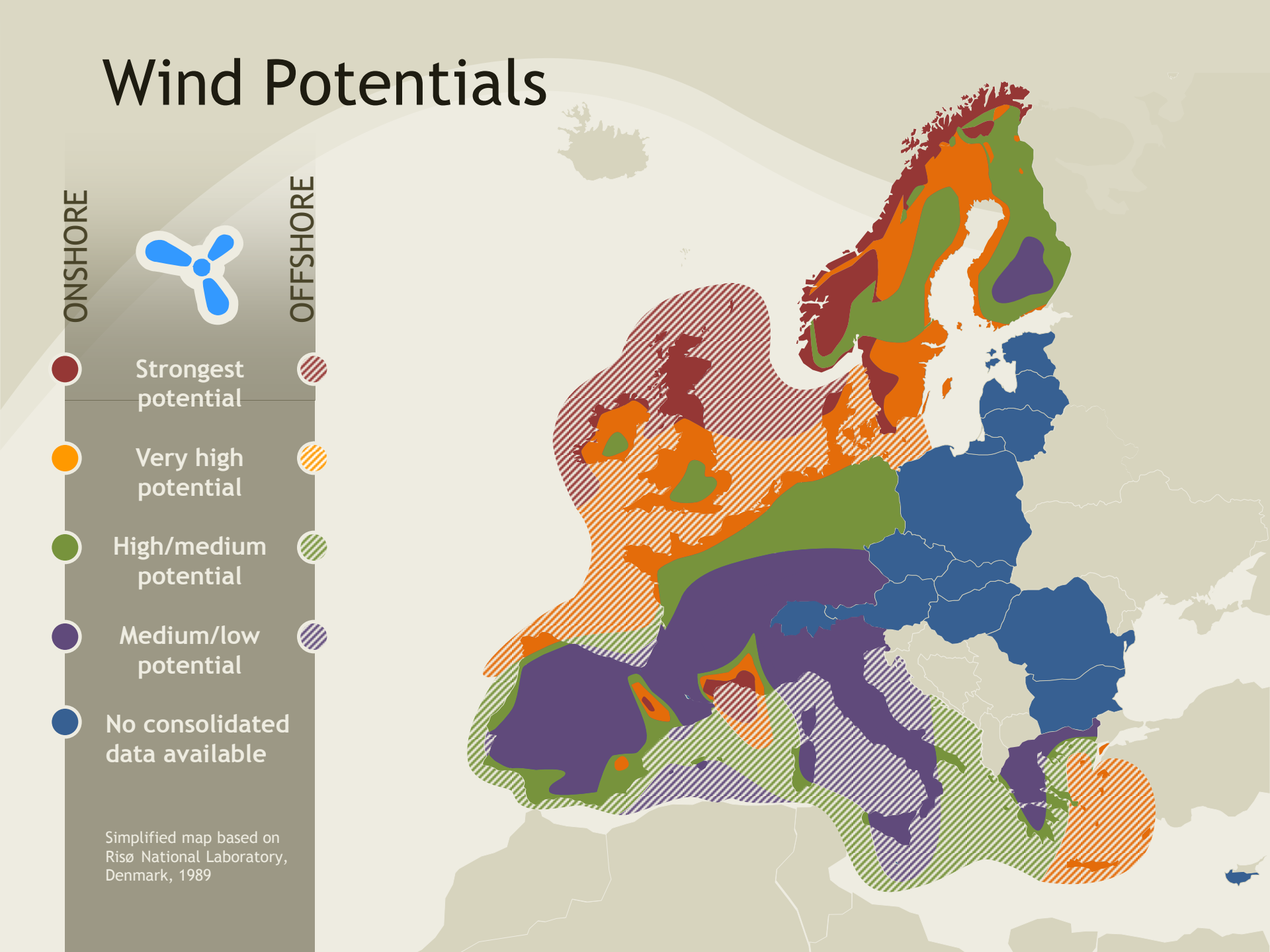


Source: BP statistical review of world energy full report 2009

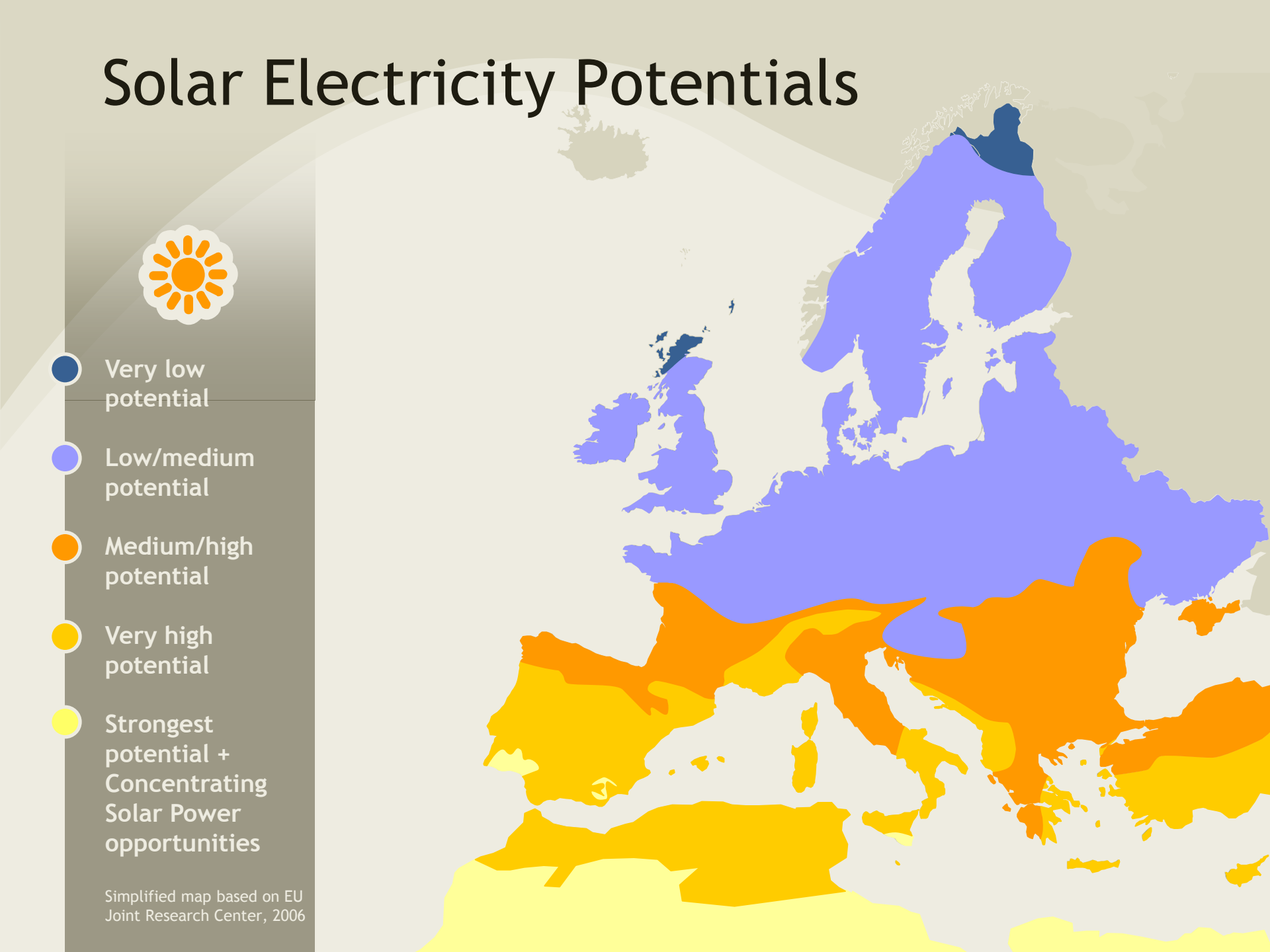
EU strongest renewable energy potentials



Wind Potentials



Solar Electricity Potentials



20 major RES leading companies

Wind power
- Vestas AG
- Siemens Wind Power A/S
- Gamesa
- Enercon GmbH
- Nordex AG

Fuel cell
- ACTA
- Ceres Power Holdings plc
- ITM Power
- Abengoa Bioenergy
- D1 OILS
- Energidalen

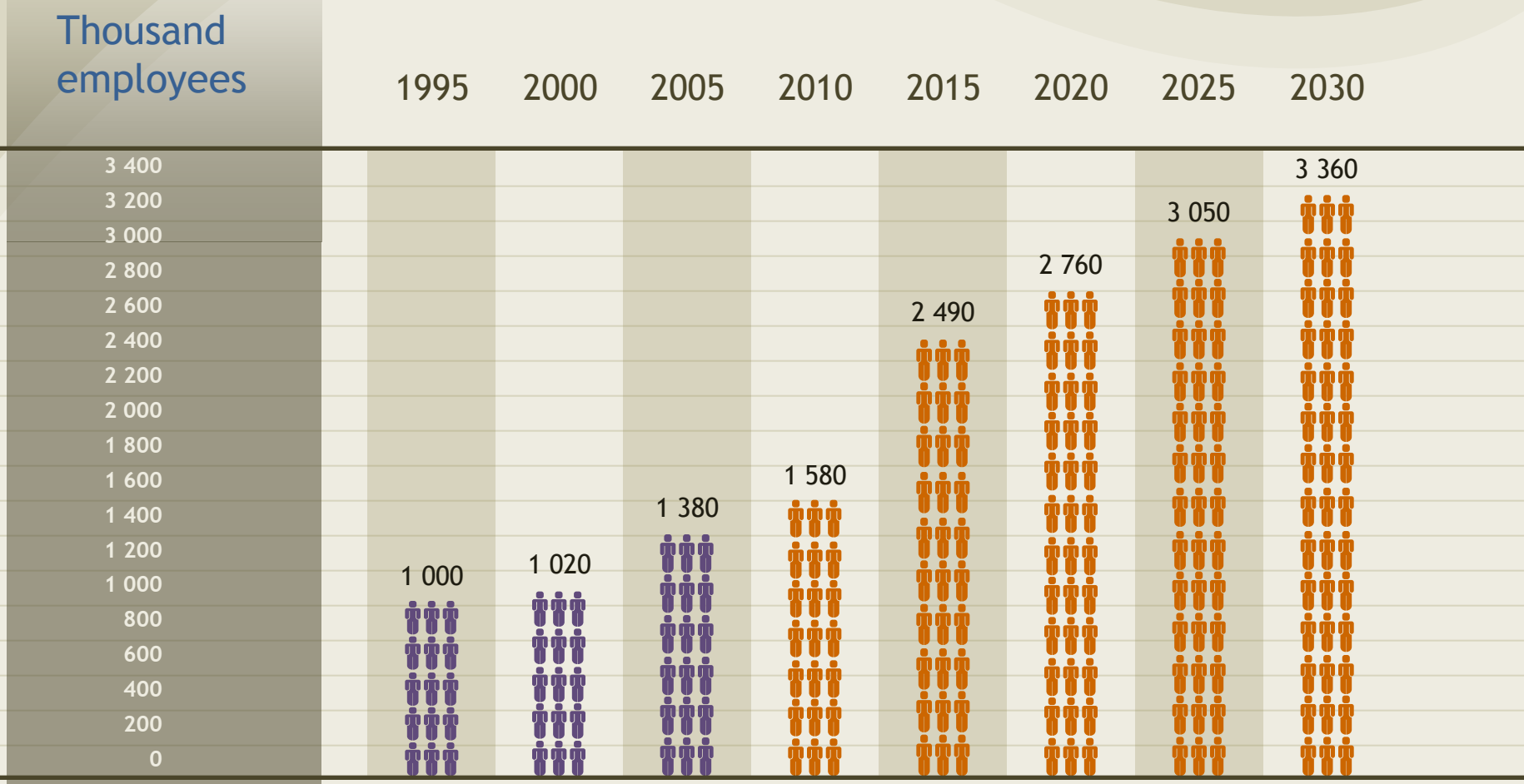
Solar energy
- Conergy AG
- SolarWorld AG
- Solon AG
- Q-Cells AG
- ErSol AG

Hydro Power
- Andritz AG
- Voith Siemens Hydro Power Generation
- Pelamis Wave Power Ltd.
- Marine Current Turbines Ltd.

Geothermal power
- Eco Systems Ireland

Forecast of gross employment in the renewables sector in EU-27

Accelerated deployment policy with moderate export share



Past impacts Accelerated deployment policy with moderate export share (ADP-ME)

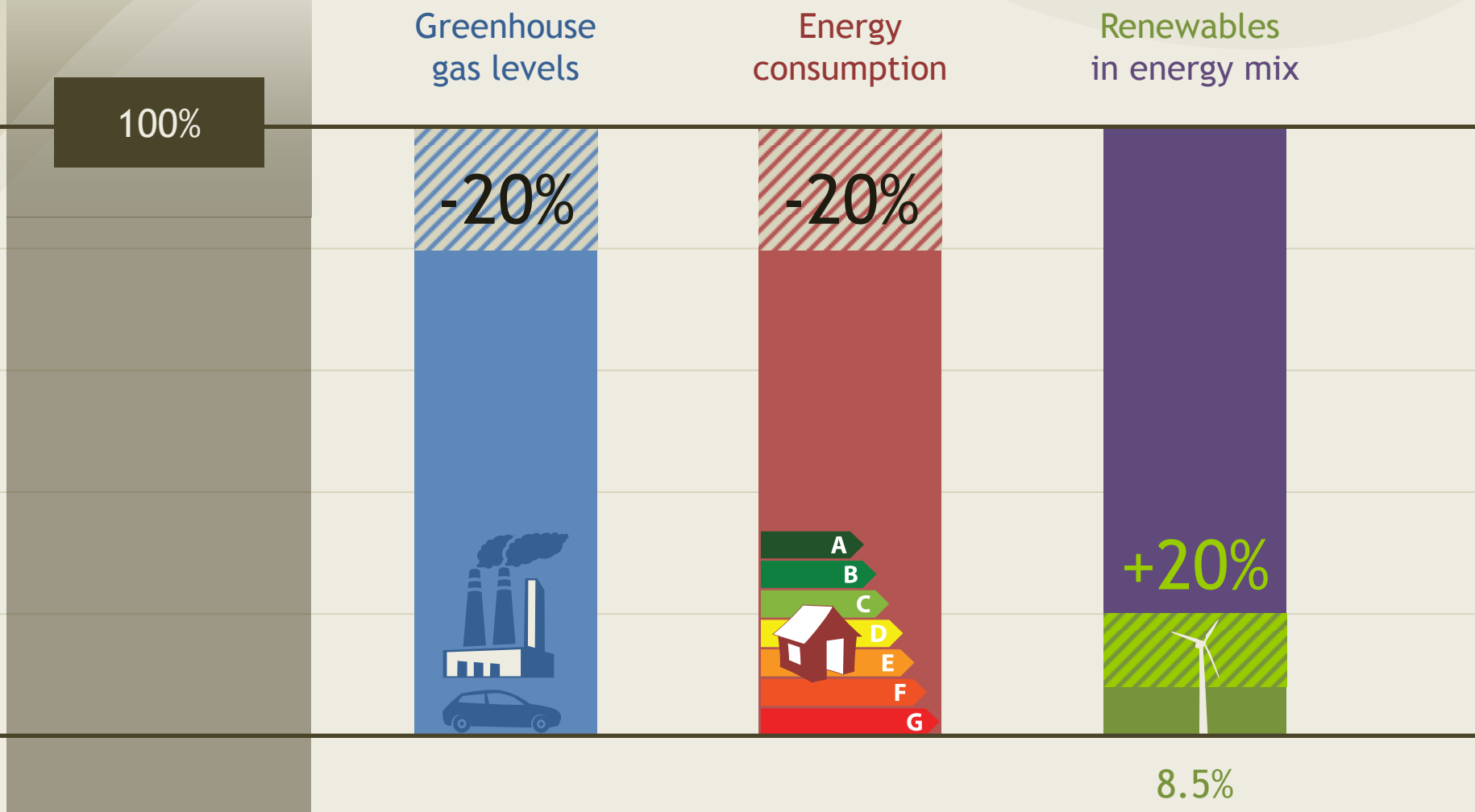
The impact of renewable energy policy on economic growth and employment in the EU
http://ec.europa.eu/energy/renewables/studies/doc/renewables/2009_employ_res_summary.pdf


A low Carbon Future
Increasing Import Dependency


A new Industrial Revolution

The 20-20-20 EU policy

By 2020



Beneficios de la eficiencia energética
Si se alcanza el objetivo del 20% para el 2020

26 000 millons = **193.000 millones de €**

Barriles de petroleo ahorrados

Ahorro anual a 73 €/barril

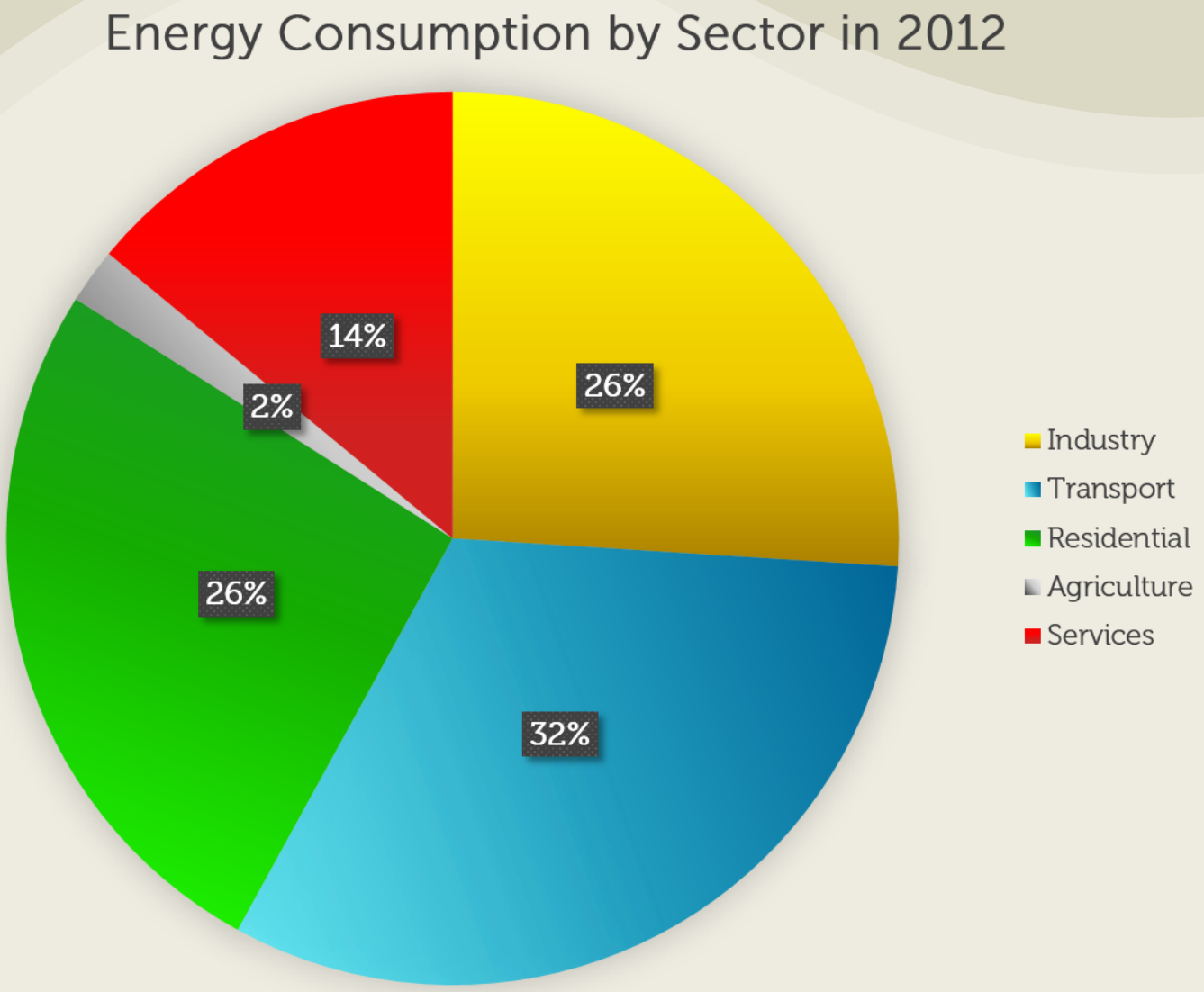
= **1 000 Plantas de carbón menos**

= **500 000 Aerogene-Radores menos**

= **PIB de Portugal**

Final energy demand by sector

EU-27



Energy efficiency: Delivering the 20% target

Key areas with the highest potential for energy savings

- Products
- Buildings and services
- Transport
- Energy transformation
- Financing
- Energy behaviour
- International partnerships

Energy using products (EuP)

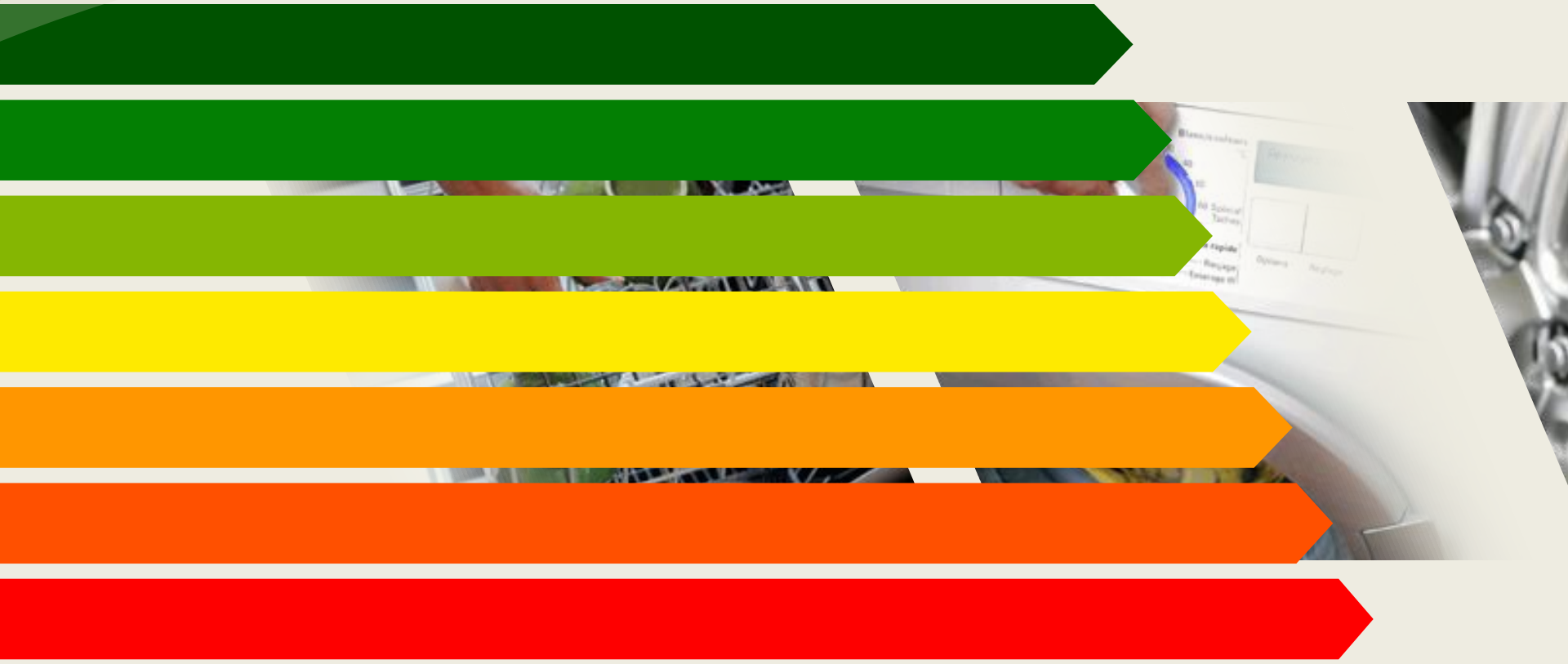
Planning eco-design and labelling measures (update 1 July 2009)	Committee vote	Commission adoption
Eco-design of standby	Jul 2008	Dec 2008
Eco-design of simple set top boxes	Sep 2008	Jan 2009
Eco-design of tertiary sector Lighting (street and office)	Sep 2008	Feb 2009
Eco-design of external power supplies	Oct 2008	Feb 2009
Eco-design of domestic lighting	Dec 2008	Mar 2009
Eco-design of circulators	Mar 2009	Jul 2009
Eco-design of electric motors	Mar 2009	Jul 2009
Eco-design and labelling of water heaters	Mar 2010	Jul 2010
Eco-design and labelling of washing machines	Mar 2010	Jul 2010
Eco-design and labelling of dishwashers	Mar 2010	Jul 2010

Energy using products (EuP)

Planning eco-design and labelling measures (update 1 July 2009)	Committee vote	Commission adoption
Eco-design and labelling of domestic refrigerators and freezers	Mar 2010	Jul 2010
Eco-design of TVs	Mar 2009	Jul 2009
Labelling of TVs	Mar 2010	Jul 2010
Eco-design of personal computers	Feb 2010	Jun 2010
Eco-design of imaging equipment (copiers, printers, faxes, scanners…)	Feb 2010	Jun 2010
Eco-design and labelling of boilers	Mar 2010	Jul 2010
Eco-design of air-conditioning	Mar 2010	Jul 2010
Amended Directive on the labelling of domestic lamps	Apr 2010	Sep 2010

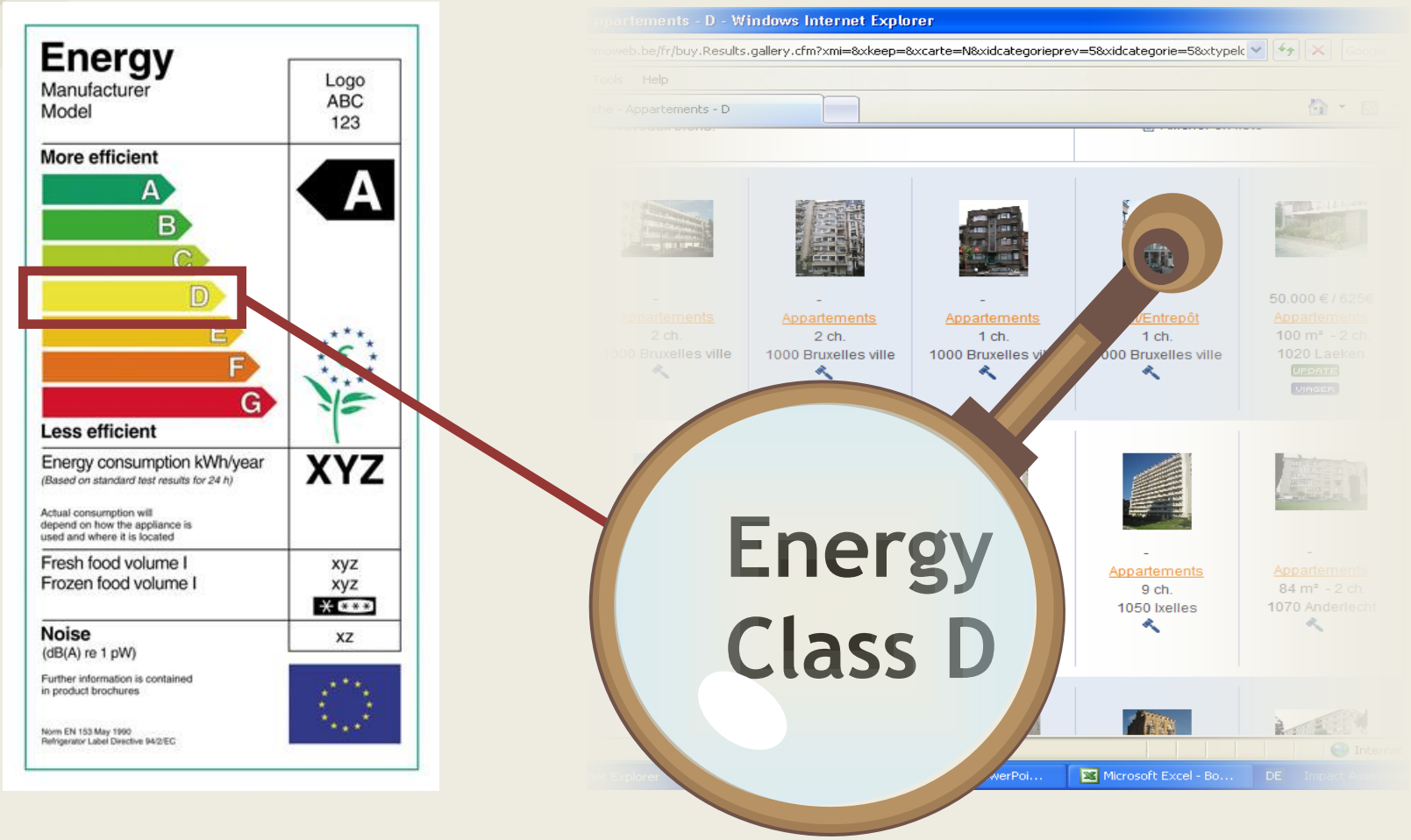
Energy efficiency

EU energy labelling



EPBD recast:
What shall happen?

Energy Performance Certificate

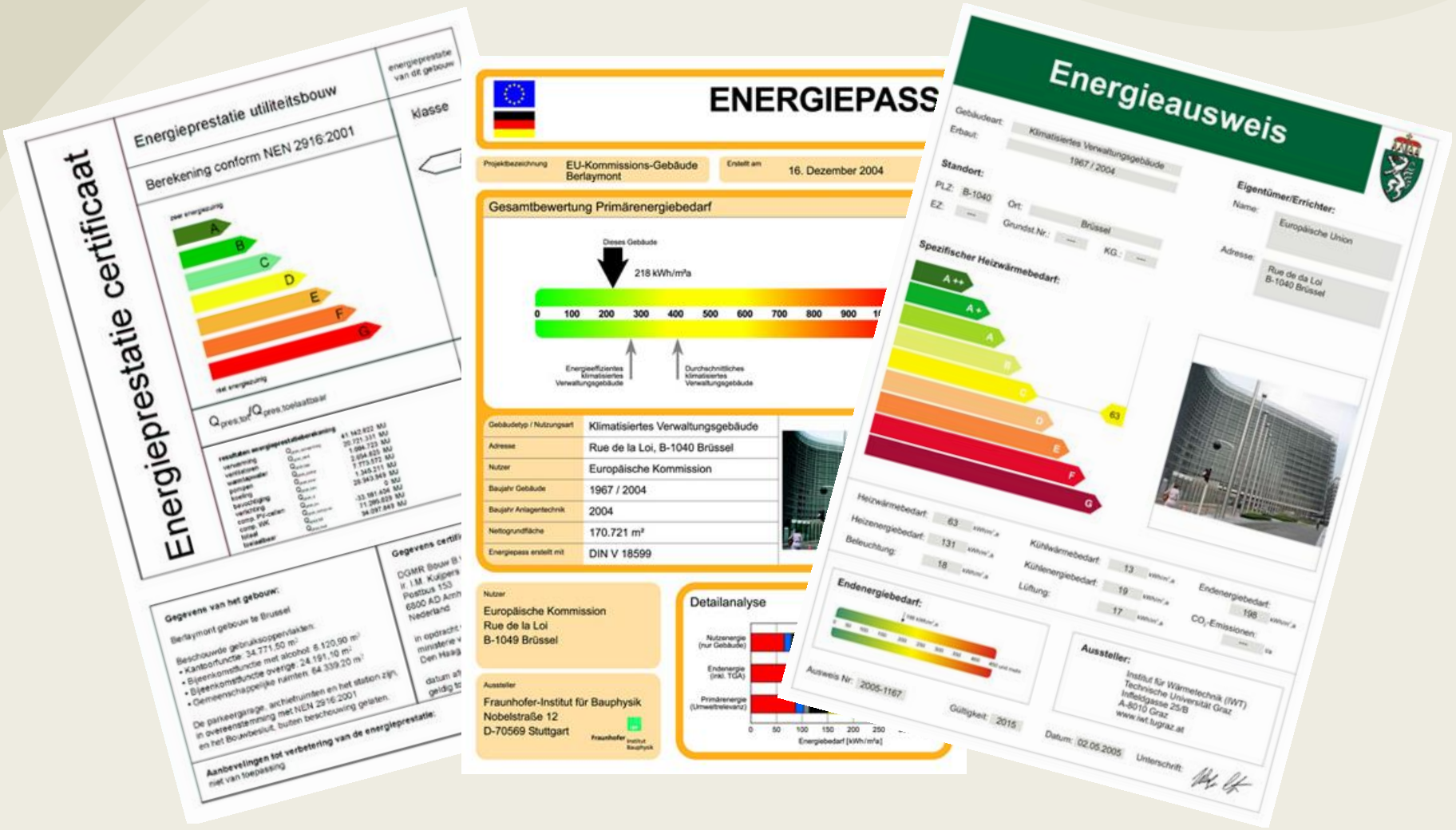


Buildings: EPBD recast

Recast of the Energy Performance of Buildings Directive (EPBD)

- Scope extended to smaller buildings in case of major renovation
- Administrative burden kept to a minimum
- Energy performance certificate to become an effective tool in the real estate market
- Stimulating higher market uptake of low or zero energy housing
- Introducing a tool to benchmark national/regional building codes

Energy Performance Certificate



New energy efficiency directive (2012)

- Quantifies 1 483 Mtoe max primary energy consumption or 1 086 final.
- Indicative national energy efficiency targets.
- Eefficiency obligations schemes or other targeted policy measures to drive energy efficiency improvements in households, industries and transport sectors;
- Smart metering to empower consumers to better manage their consumption.
- Obligatory energy audit for big companies and incentives for.
- Annual renovation of 3% of public buildings.
- Efficiency in energy generation.

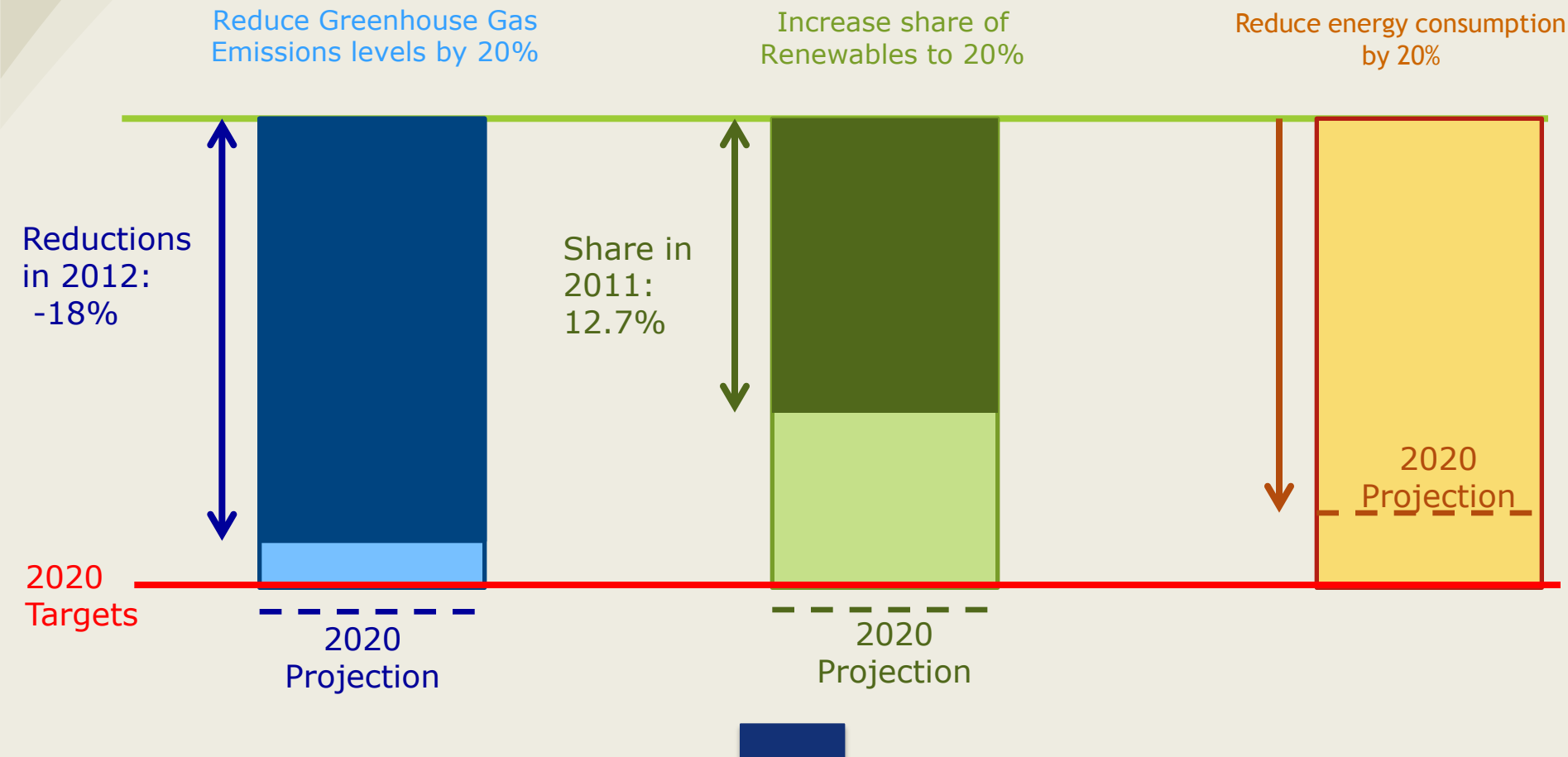
2030

FRAMEWORK for CLIMATE & ENERGY

#EU2030

1. Climate and energy: where do we stand?

- Progress towards the 2020 goals



1. Climate and energy: where do we stand?

- Main changes

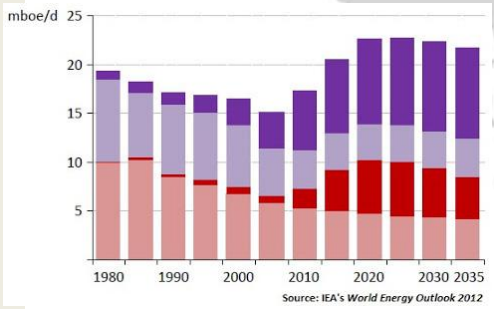
Renewable energy saw rapid cost decreases
Technologies are gradually becoming competitive

Impact of the financial crisis
Fall in private investment, tight financing conditions

Fukushima

Some countries phase out nuclear power production

Shale gas
US oil and gas production

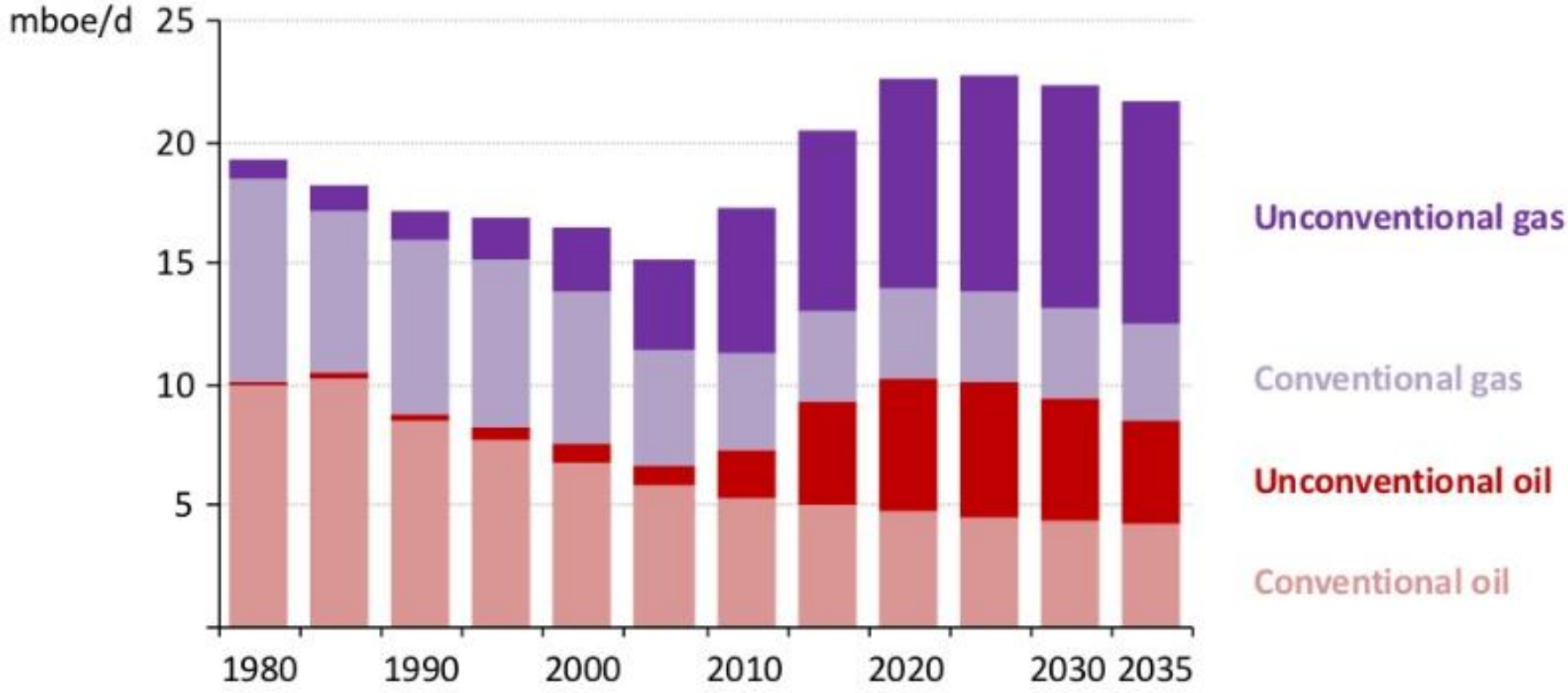


Unconventional gas
Unconventional oil
Conventional gas
Conventional oil

Rising demand
-> rising prices
By 2030, world economy set to double and energy demand to rise by 1/3

A United States oil & gas transformation

US oil and gas production

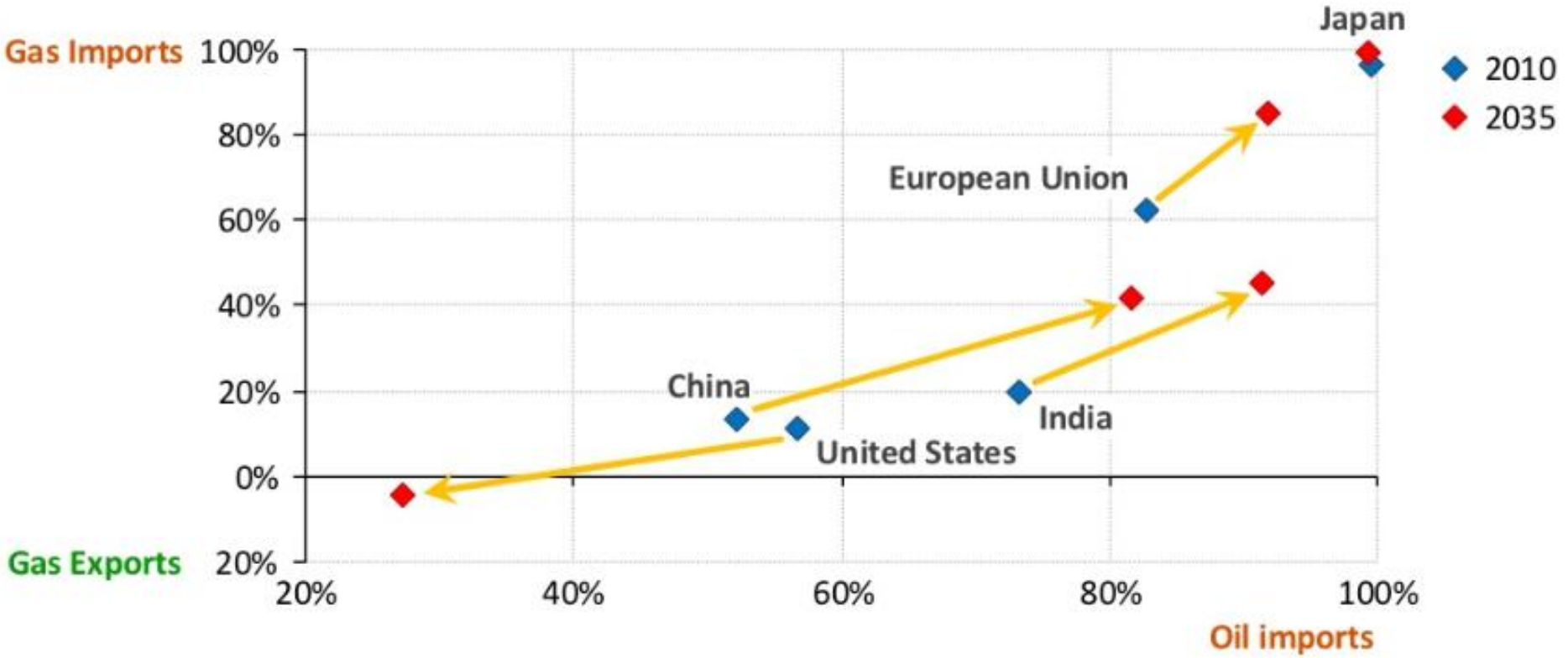


The surge in unconventional oil & gas production has implications well beyond the United States

Different trends in oil & gas import dependency

WORLD ENERGY OUTLOOK 2012

Net oil & gas import dependency in selected countries

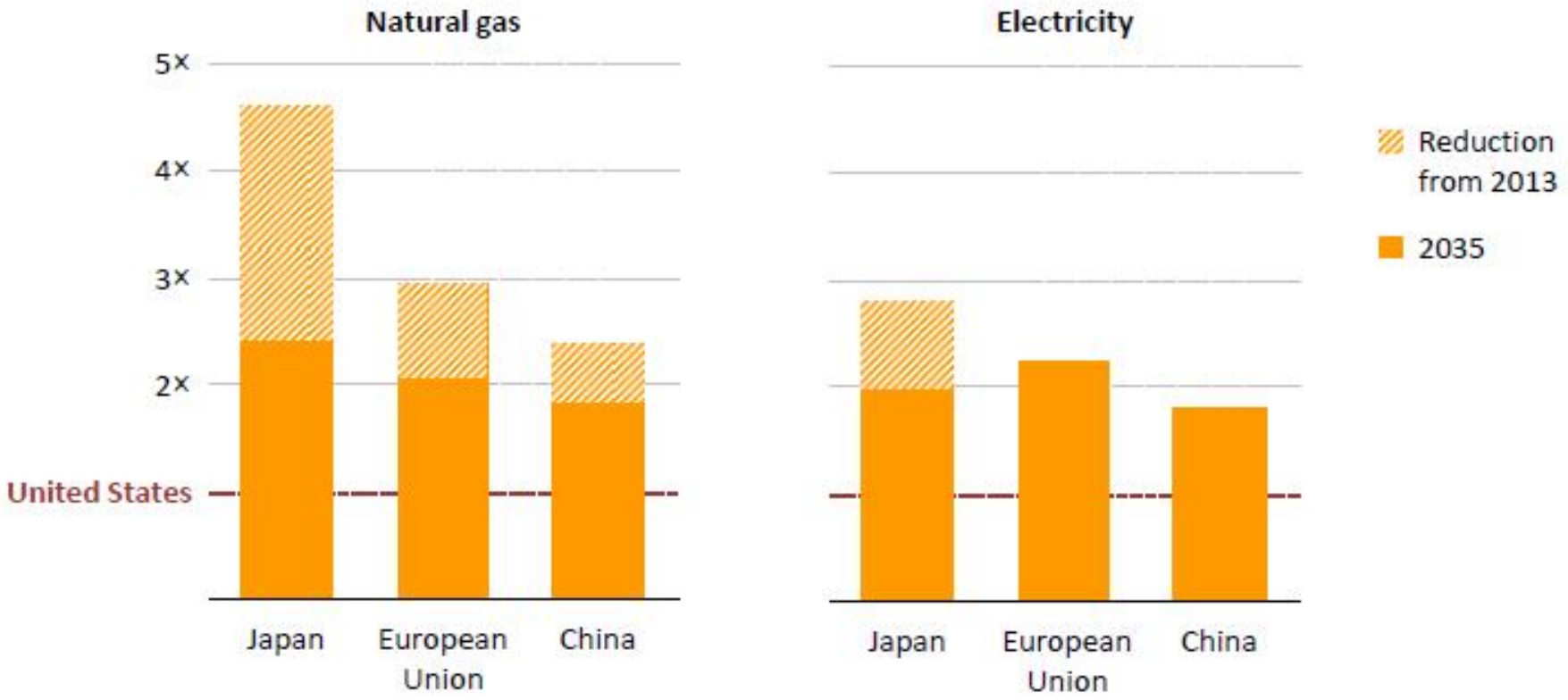


While dependence on imported oil & gas rises in many countries, the United States swims against the tide

Who has the energy to compete?

WORLD ENERGY OUTLOOK 2013

Ratio of industrial energy prices relative to the United States

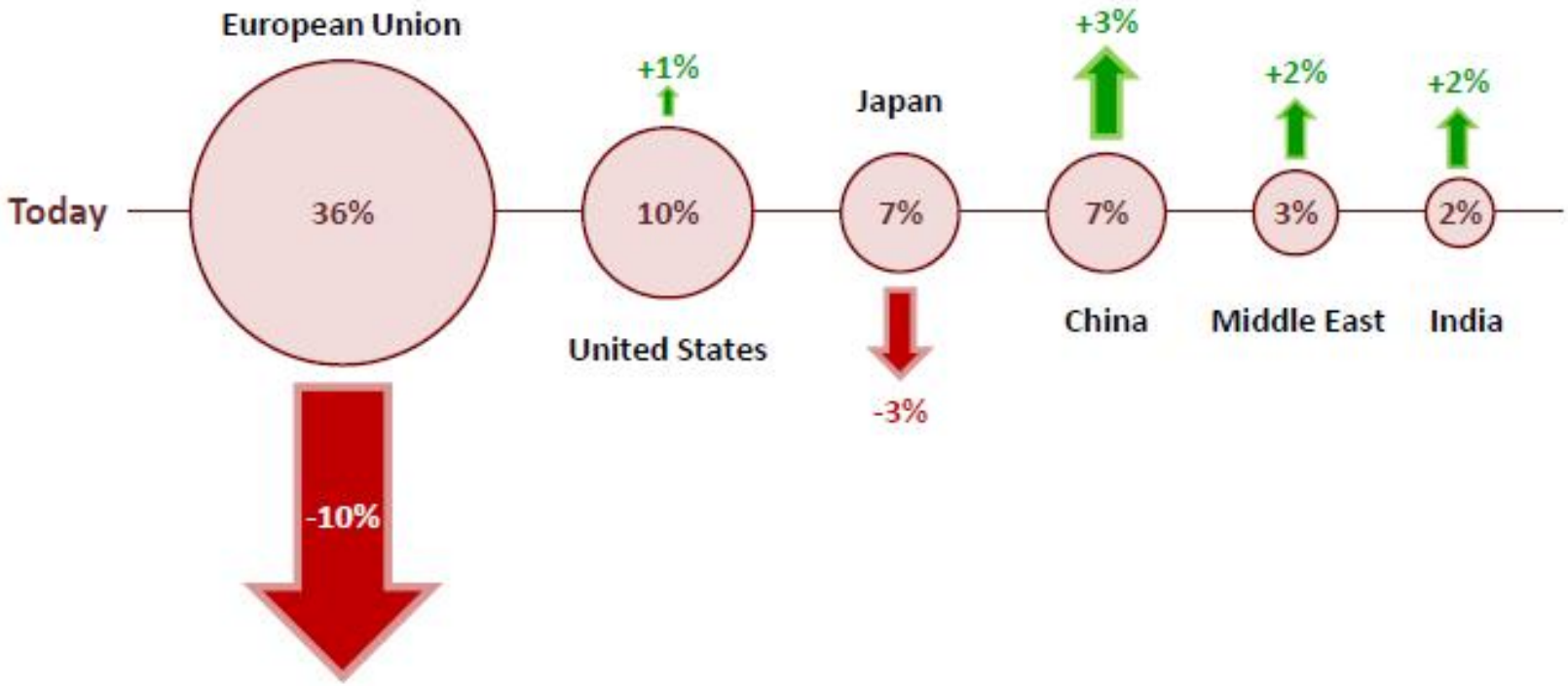


Regional differences in natural gas prices narrow from today's very high levels but remain large through to 2035; electricity price differentials also persist

An energy boost to the economy?

WORLD ENERGY OUTLOOK 2013

Share of global export market for energy-intensive goods



The US, together with key emerging economies, increases its export market share for energy-intensive goods, while the EU and Japan see a sharp decline

1. Climate and energy: where do we stand?

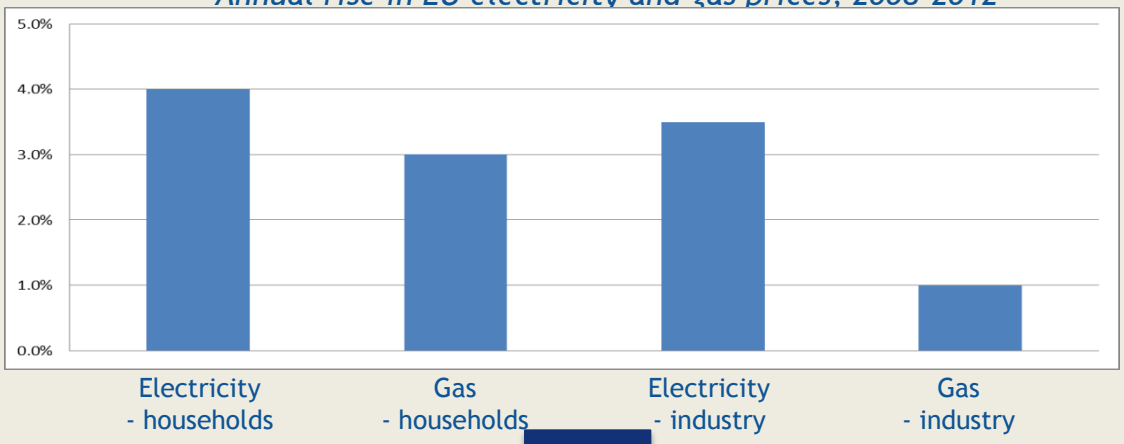
- Prices and costs

In the EU:
- Wholesale prices have been stable or low
- Retail prices have risen, often above inflation, mainly driven by:
  - taxes and levies, network costs and energy supply costs.

Elsewhere:
- Prices (especially gas) have fallen.

Europe needs to contain energy costs to remain competitive.

Annual rise in EU electricity and gas prices, 2008-2012



1. Climate and energy: where do we stand?

- Prices and costs

  - Minimise network costs with best practice
  - Complete the internal (wholesale and retail) market: competition brings cost savings
  - Switch energy supplier
  - Use more energy efficient products and processes
  - Keep (energy financed) energy and climate policies cost effective
  - Ultimately, protect vulnerable households and exposed industries

2. Why a new framework for 2030?

Reducing Greenhouse Gas Emissions (GHG) **cost-effectively**

2050 objective: -80% to -95% GHG

Security of EU energy **supplies**

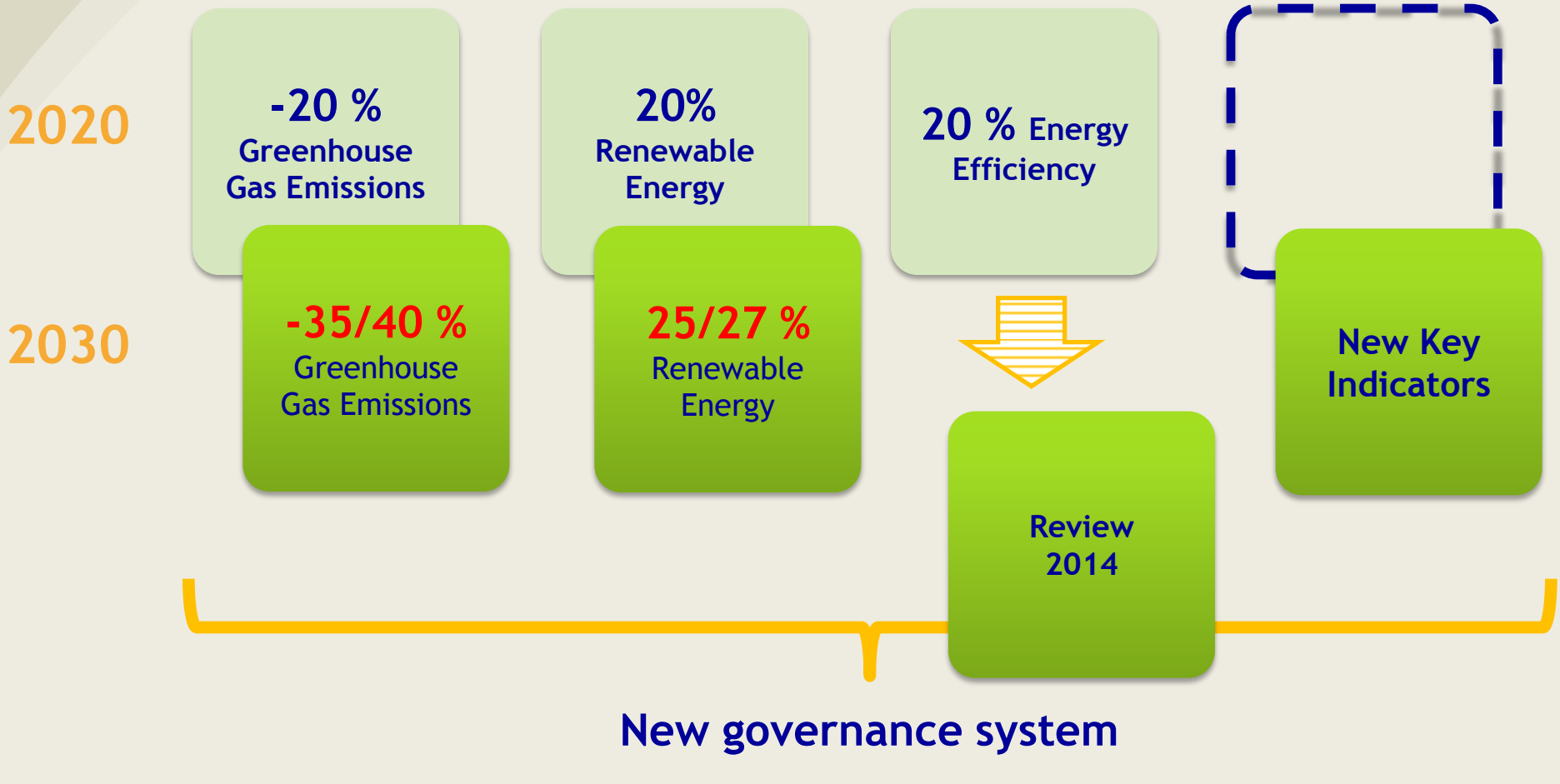
EU oil and gas imports:
€ 400 billion per year

EU contribution to 2015 **international climate agreement**

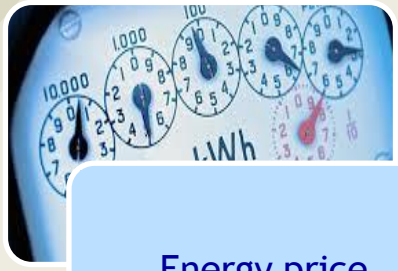
Competitive energy and new **growth** and **jobs**

Eco-industry already employs 4.2 million

3. How it works



3. How it works



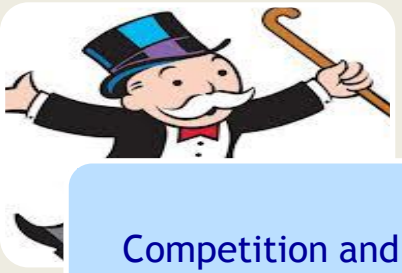
Energy price differentials

Diversification imports,

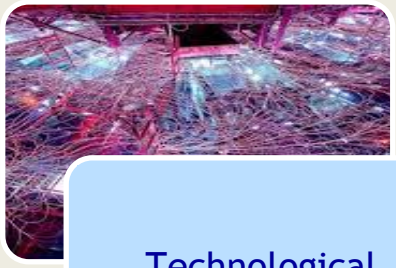
share of indigenous energy

Smart grids & connectors between Member States

Intra-EU coupling energy markets



Competition and market concentration



Technological innovation

3. How it works

- New Governance system

National plans for competitive, secure and sustainable energy

Commission develops **detailed guidance**

Member States prepare plans based on **an iterative process**

Commission assesses Member States' plans and commitments

Include domestic objectives on:

- non-ETS GHG emissions
- renewable energy
- energy savings
- energy security
- ….

4. Main challenges…

Energy **costs**

- **Increasing** in any event: renew **ageing** energy system, rising fossil **fuel prices**, adherence to **existing policies**

Additional **investments** to achieve 2030 framework

- Shift away from **fuel expenditure** towards investments, additional **€ 38 billion** investment/year 2011-2030 compared to the reference scenario

Differences between Member States

- Future discussion will have to be centred on how to ensure an **equitable burden sharing** affordable for all

« *I want to reform and reorganise Europe's energy policy in a new European Energy Union.* »

Jean-Claude Juncker

Source: Directorate-General for Energy

The Energy Union

Where we want to go:

Secure, sustainable, competitive, affordable energy for every European

What this means:

Energy security, solidarity and trust
A fully integrated internal EU-wide energy market
Energy efficiency as an energy source in its own right
Transition to a low-carbon society
Research, innovation and competiveness

How we want to reach it:

Source: Directorate-General for Energy

Our vision of an Energy Union

True **solidarity and trust**; speaking with **one voice** in global affairs

An **integrated**, continent-wide energy system

Sustainable, **low-carbon** and climate-friendly economy

Strong, innovative and **competitive** European economy

Citizens taking ownership of the energy transition

Source: Directorate-General for Energy

1 Energy Security, solidarity and trust

5 GUIDING DIMENSIONS

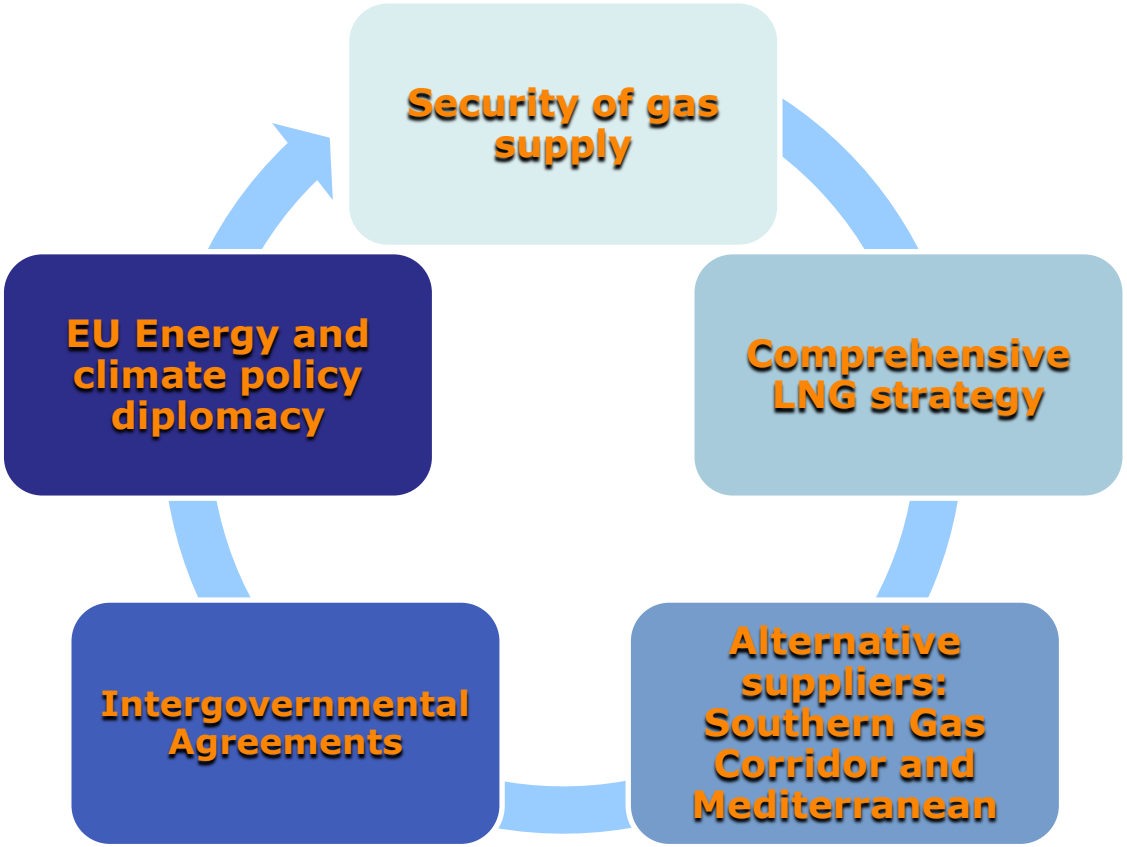
We have to diversify energy supply

This means an increased variety of sources, suppliers and routes; increasing transparency on gas supply; working together on security of supply and developing a stronger European role in global energy markets.

Source: Directorate-General for Energy

Energy Security, solidarity and trust

Concrete actions



Source: Directorate-General for Energy

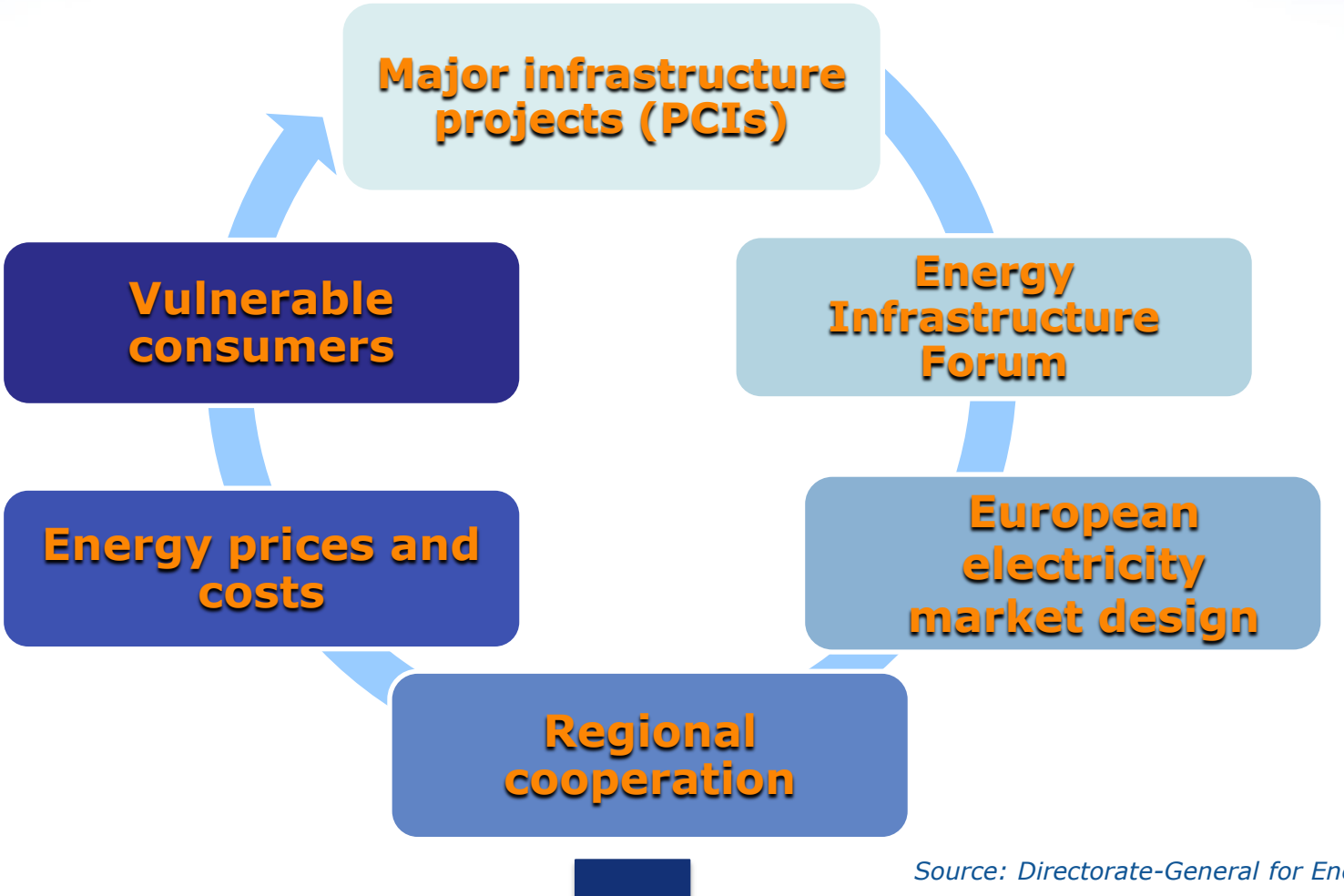
2 A fully-integrated internal energy market

5 GUIDING DIMENSIONS

Energy should flow freely across the EU – without any technical or regulatory barriers

Source: Directorate-General for Energy

A fully-integrated internal energy market
Concrete actions



Source: Directorate-General for Energy

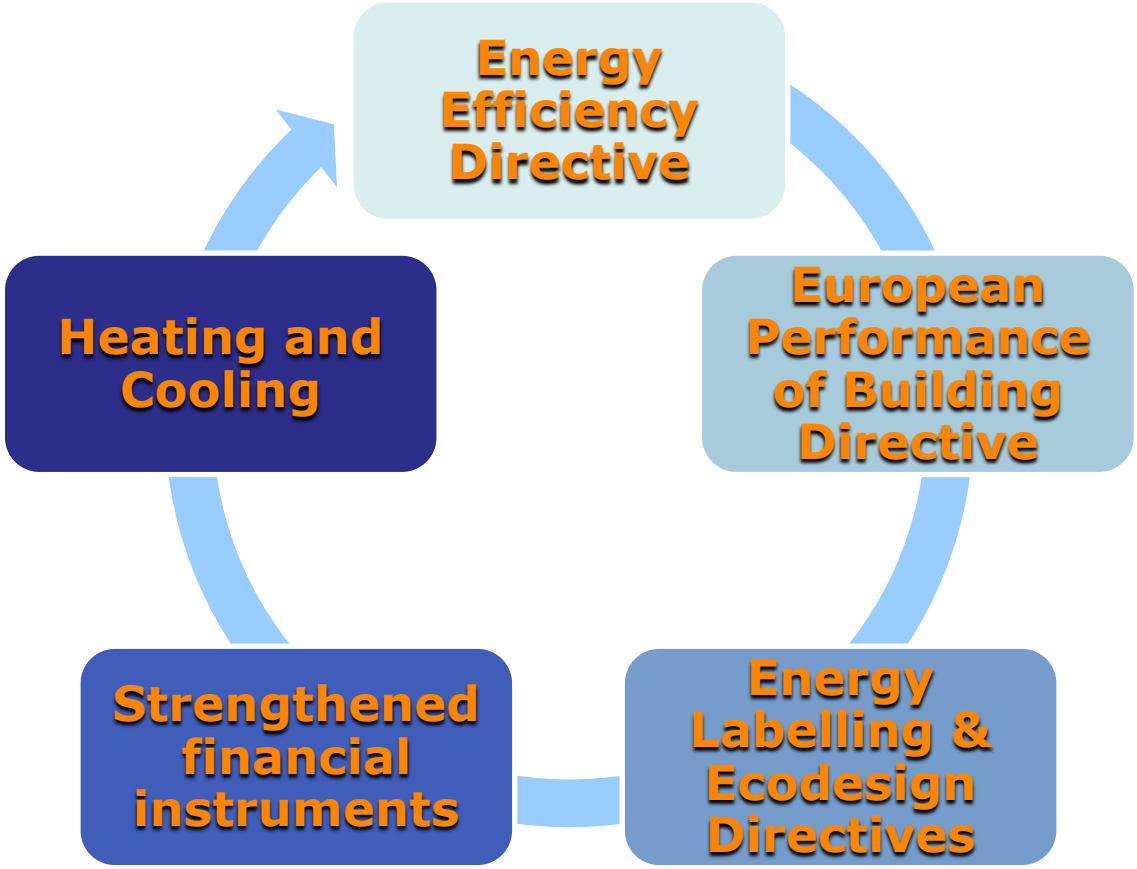
3 Energy efficiency

Rethink energy efficiency as an energy source in its own right

Source: Directorate-General for Energy

Energy efficiency

Concrete actions



Source: Directorate-General for Energy

4 Decarbonisation of the Economy

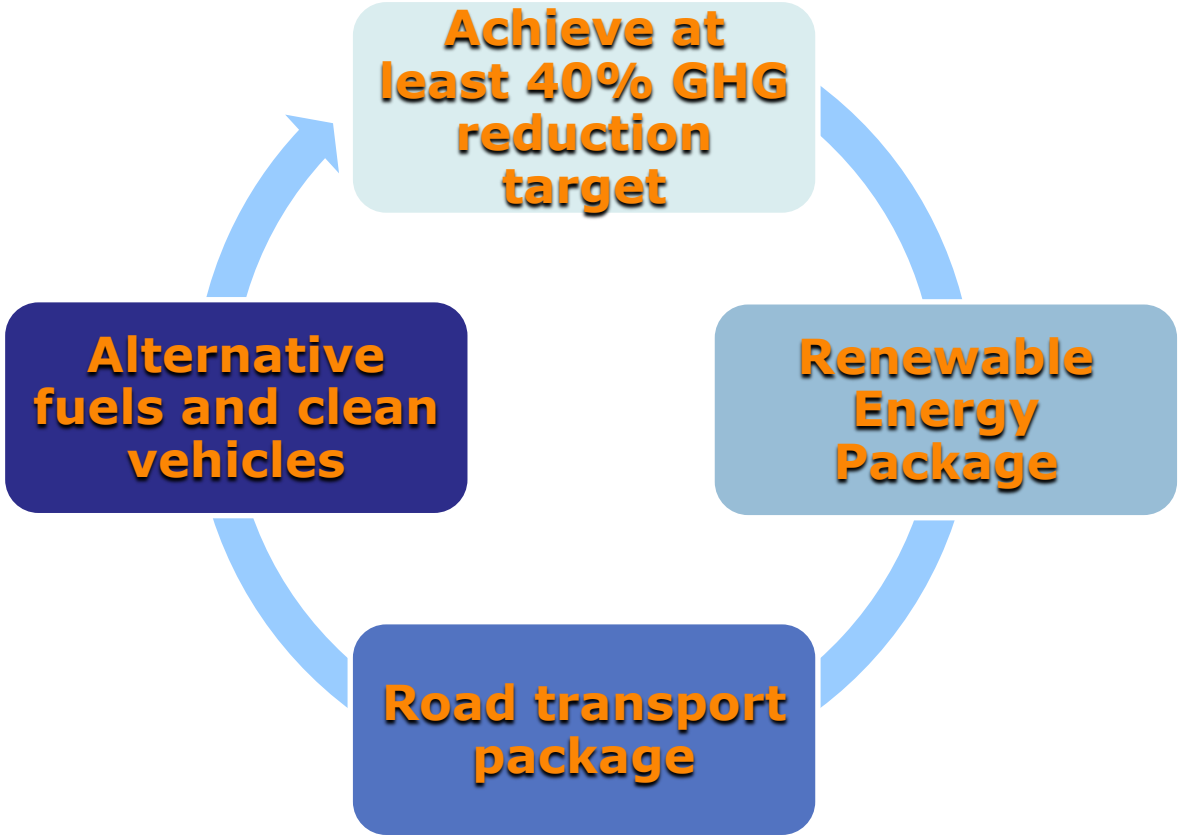
5 GUIDING DIMENSIONS

An ambitious climate policy is an integral part of our Energy Union

Source: Directorate-General for Energy

Decarbonisation of the Economy

Concrete actions



Source: Directorate-General for Energy

5 Research, innovation And competitiveness

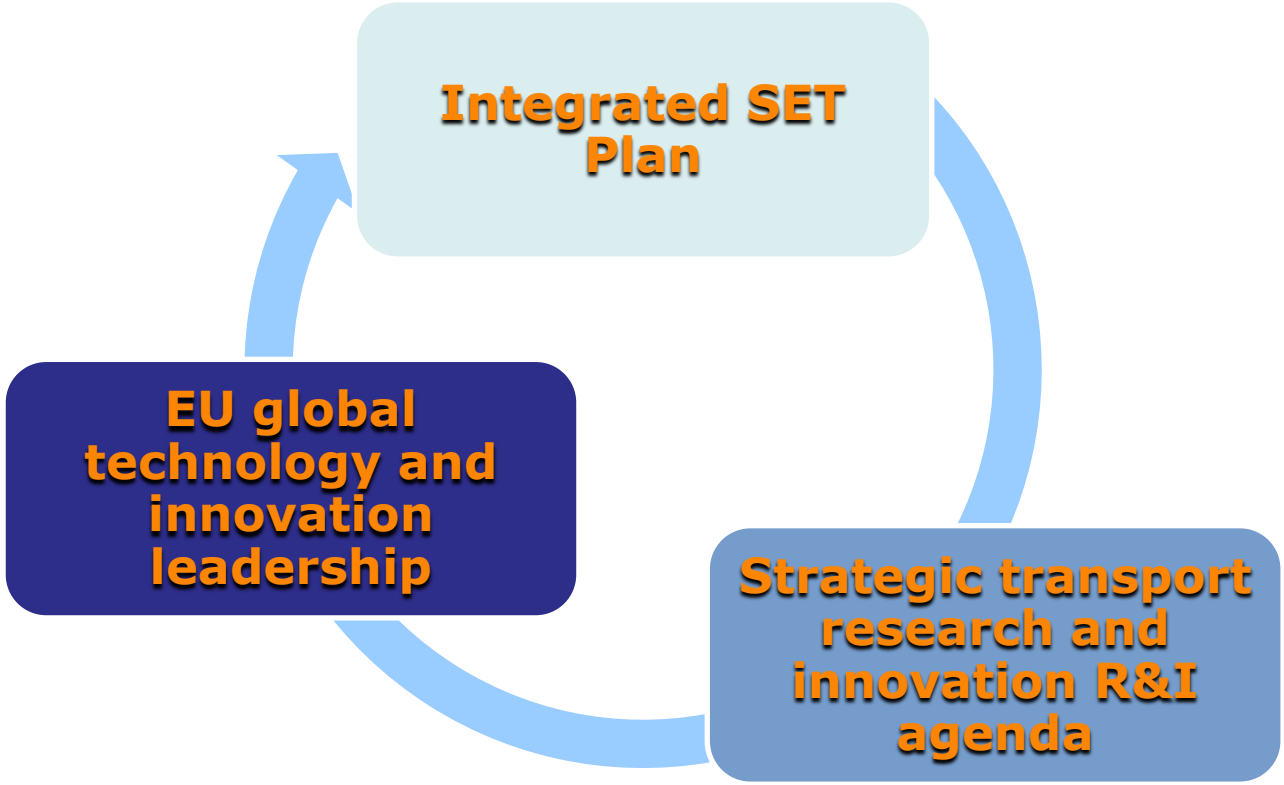
5 GUIDING DIMENSIONS

Developing EU technological leadership in low carbon technologies

Source: Directorate-General for Energy

Research, innovation and competitiveness

Concrete actions



Source: Directorate-General for Energy

Delivering the Energy Union:
A dynamic governance

Source: Directorate-General for Energy

#EnergyUnion

@Energy4Europe

Source: Directorate-General for Energy