The Greens | EFA
in the European Parliament

On the road to Copenhagen - and beyond

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Draftsman of 2008 Renewable Energy Directive

On the menu today

- EU – a unique institution
- EU climate & energy package 2008
- EU renewable energies success story
- EU sustainability criterias for fuels
- EU energy efficiency aspiration
- EU internal electricity & gas market
- EU's new alliances: green cities & regions
- Beyond Copenhagen: the real agenda

The EU – a unique institution

- A post world-war II « peace through economic integration » project
- Enlarged from 6 to 27 (33?) Memberstates
- A supra-national institution which is NOT a federation of States but MORE than a cooperation between its Members
- A strong power on legislation (internal market, environment, competition,…)
- A weak player on budget (EU budget = 1% of EU GDP)

The EU - a complex decision making process

- EU Council of Heads of States (3 to 4 times a year) – the BIG orientations
- EU Commission – the EU administration with proposing and infringement powers
- EU Parliament – the EU « congress » directly elected and with increasing co-decision powers
- EU Councils of Ministers – the EU senate composed by the governments of the 27
- EU Court of Justice – more than just interpretation of EU law

Is there an EU energy and environmental policy?

- On Environment: a clear institutional YES

  → The EU Institutions are mandated to be the key driver of environmental policy in Europe and a motor of global environmental policies – weakness: environmental taxes NOT in qualified majority mode

- On Energy: strong influence despite no clear EU Treaty competence

  → The EU institutions are taking huge indirect influence on Europe's energy policy through environmental and internal market competence

2008/9 decisions in addition to climate package

- **Internal Market package III**
  - More powers to and better coordination between regulatory agencies
  - Creation of ACER and ENTSO and further push to regional energy markets
  - Roll out of smart meters until 2022
  - BUT: still no full ownership unbundling grid
  - BUT: still no de-link of revenues from kWh

- **EU recovery package**
  - 4 billion € for EU grid integration, CCS demonstration projects and off-shore wind projects

2007- 2009: a new push towards a climate friendly EU

- The international context
  - IPPC, Al Gore, Stern – a new media hype around the urgency of climate change
  - volatile oil prices and peak oil discussions
  - China's energy hunger and national control of oil & gas ressources (Russia, Bolivia,…)
- The European context
  - Ukraine-Russia gas crises
  - Strong German-French leadership on climate and energy questions

Climate package 2008/2009

- Overall GHG reductions of 20% and 30% if the Copenhagen deal goes ahead
- ETS cap & trade with full auctioning for the power sector
- Minimum 20% improvement of energy efficiency through a multitude of actions (non-binding)
- Minimum 20% renewable energies in EU final energy with binding national targets and action plans
- CCS legislation and financing of demonstration PP
- CO^2 and cars (130 g/km in 2015, potentially 95 g/km in 2020)
- Covenant of majors (partnership between EU and cities)

EU approach strenght

- Offer to go to minimum 30% reduction if other major partners join in could keep Copenhagen inside “IPPC” minimum 2°C targets
- EU ETS could be a model for a world carbon trading regime for industrial production processes
- EU laws on minimum standards (cars, appliances, aso) will have a positive global influence
- 20% renewable energy and 20% energy efficiency (if delivered) will structurally change the EU energy business model

EU approach weaknesses

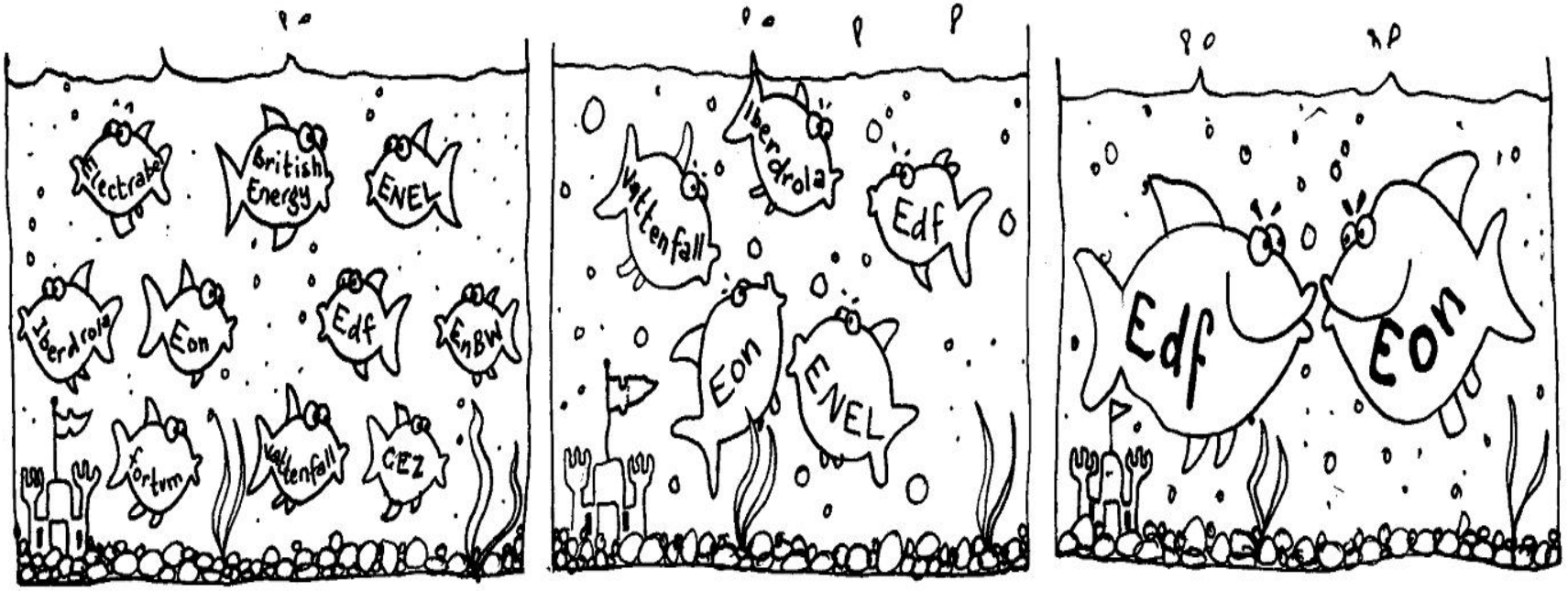
- LOW CARBON FLATLAND -

- Up to 2/3 of the 20% EU GHG reductions potentially through « outside EU Kyoto-type measures »
- Huge opposition of EU industry and some Member States to go from 20 to 30% GHG red.
- EU ETS price signal not strong enough to generate « structural change » in major industries and in EU society
- Efficiency targets not (YET) binding, renewables energy potentials not fully exploited

20% efficiency & 20% renewables alone deliver a 20% C02 reduction

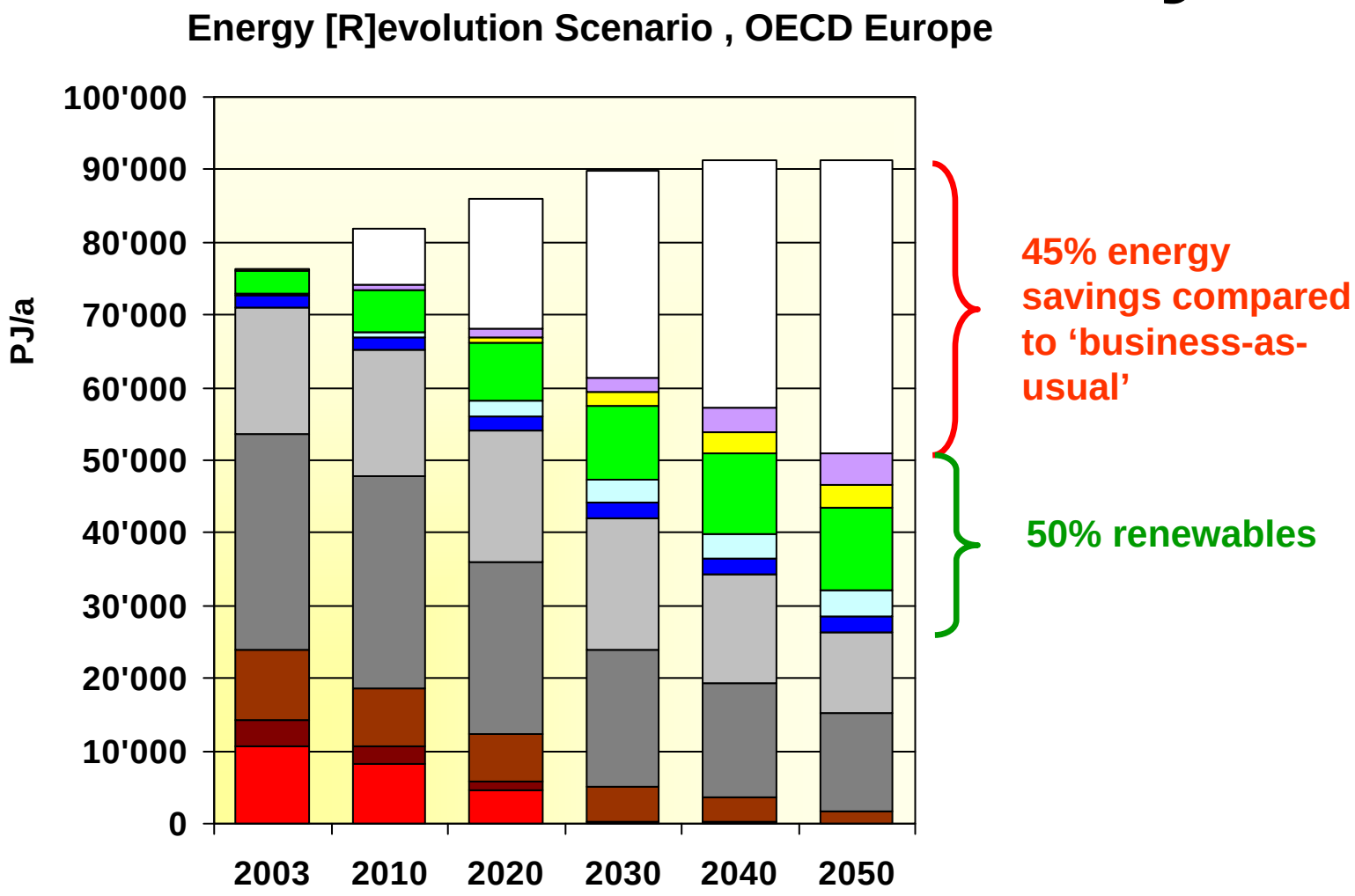
EU-27 Mtoe	2005	Baseline oil price $100/bbl	EU Scenario 2020 Consistent with the 20 – 20 – 20 targets as decided 2008
Primary Energy Demand	1705	1903	1474 (-20%)
OIL	666	648	500 (-25%)
GAS	445	443	445 (stable)
RENEWABLES	123	221	274 (+25%)
SOLIDS	320	340	160 (-53%)
NUCLEAR	257	249	120 (-52%)

“fat cats” are undermining competition& politics

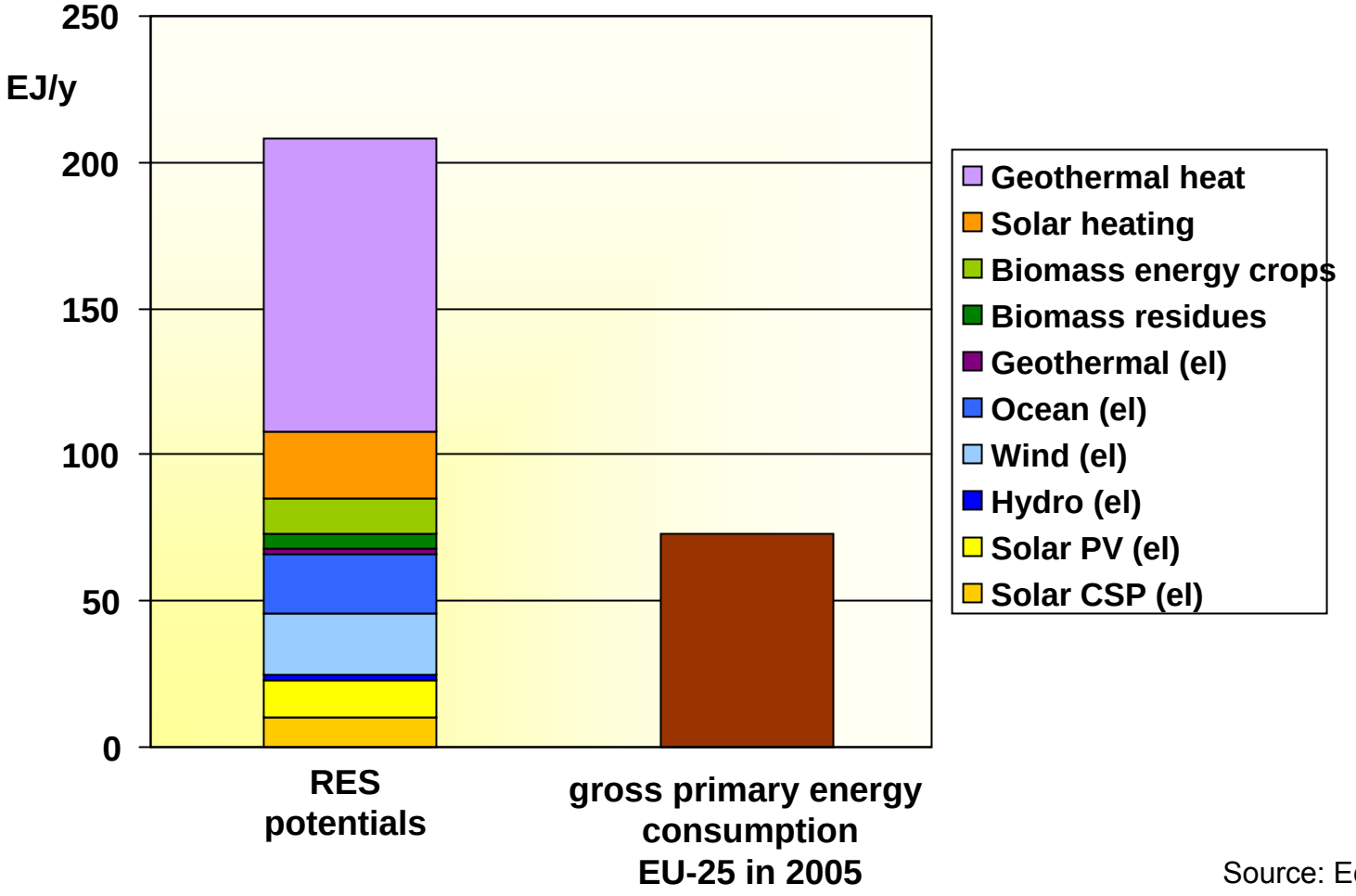


Big fish, small pond

From vague carbon flatland to a clear HE- HR hierarchy

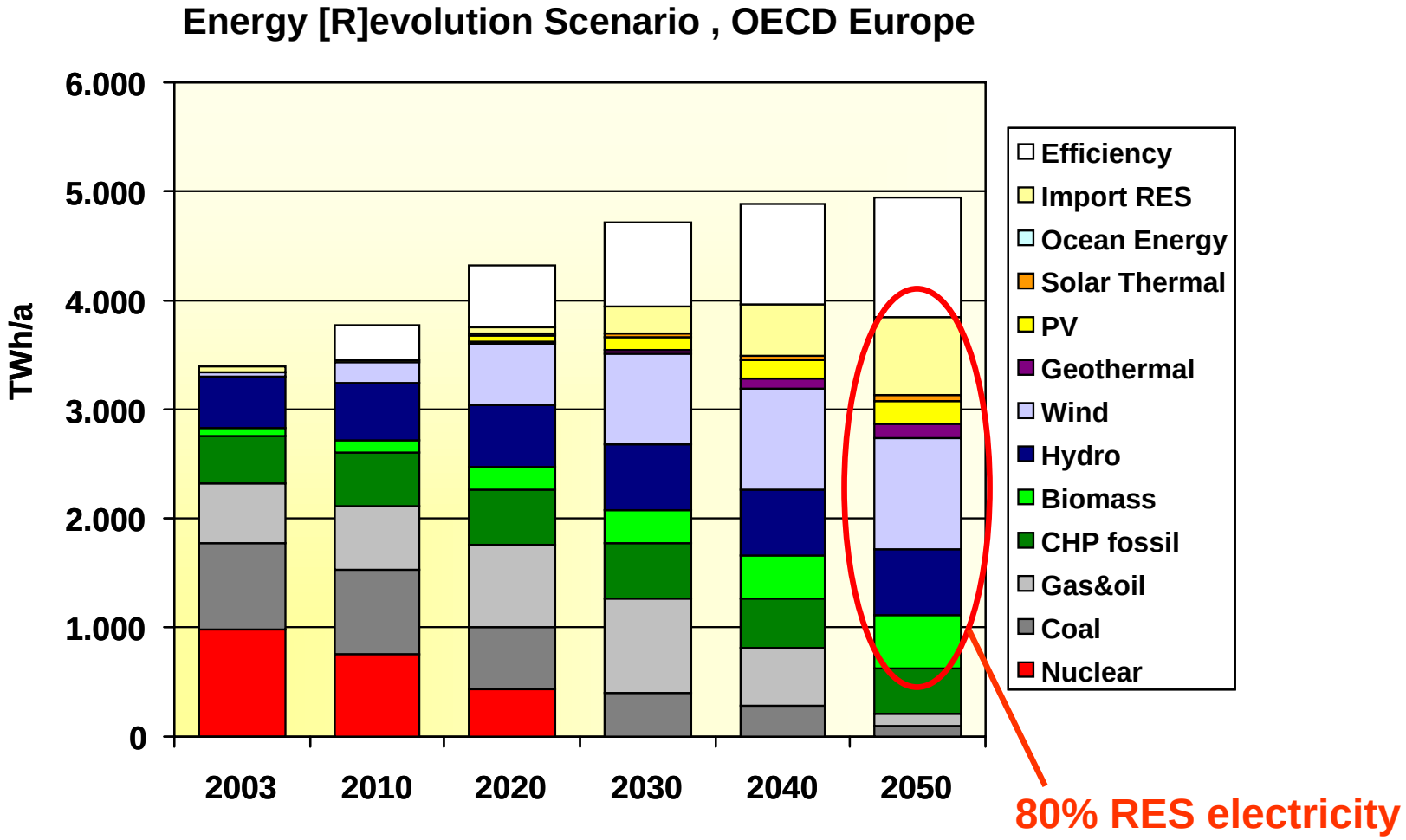


Renewable energy technical potentials in Europe

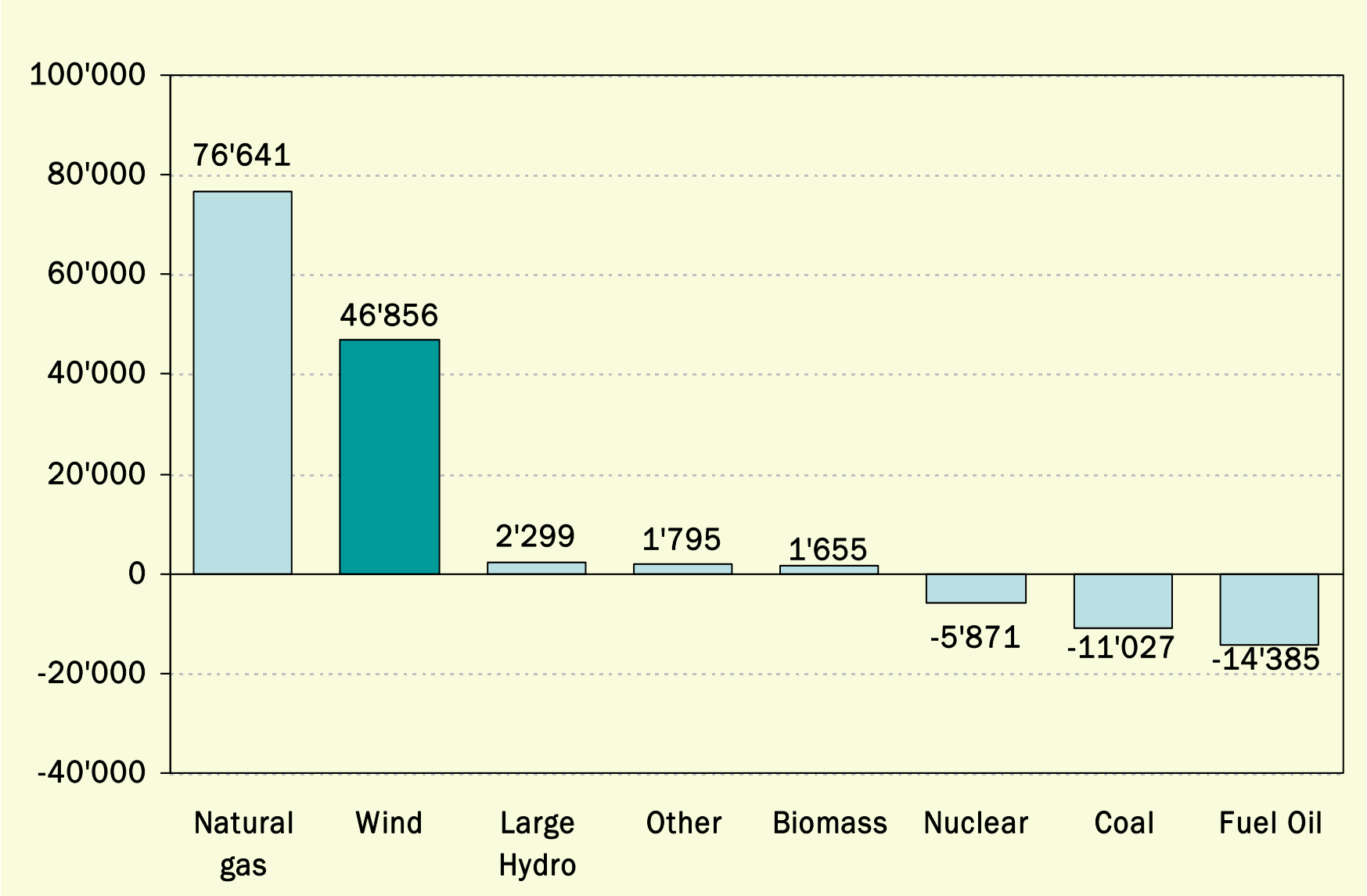


Source: Ecofys, DLR

RES deployment potentials in the electricity sector

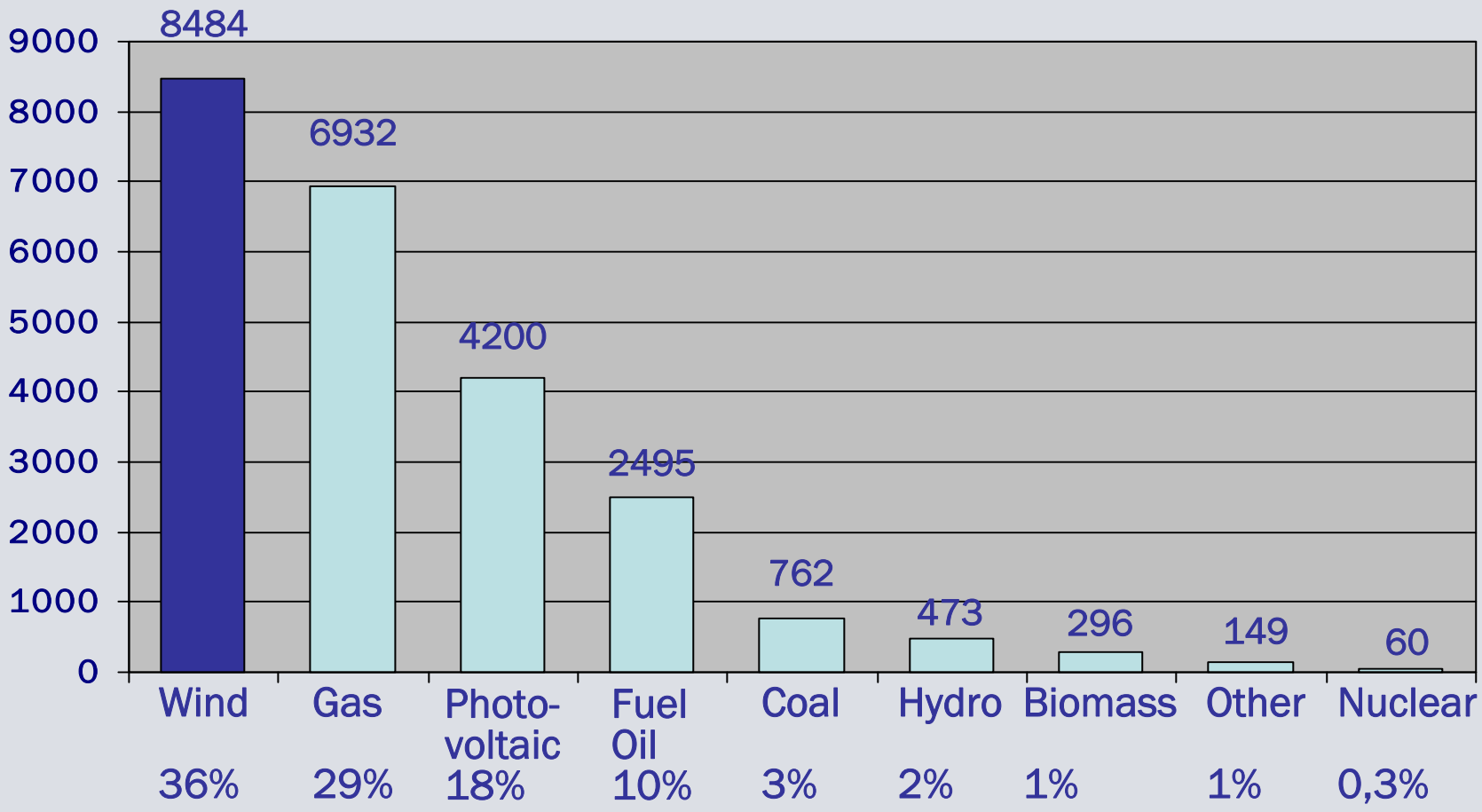


Evolution in net power capacity (2000-2007, MW)



Source: EWEA Pure Power report, Platts PowerVision

Wind was N°1 in EU 2008 (total 23,851 MW)



Note: Preliminary figures for solar photovoltaic installations

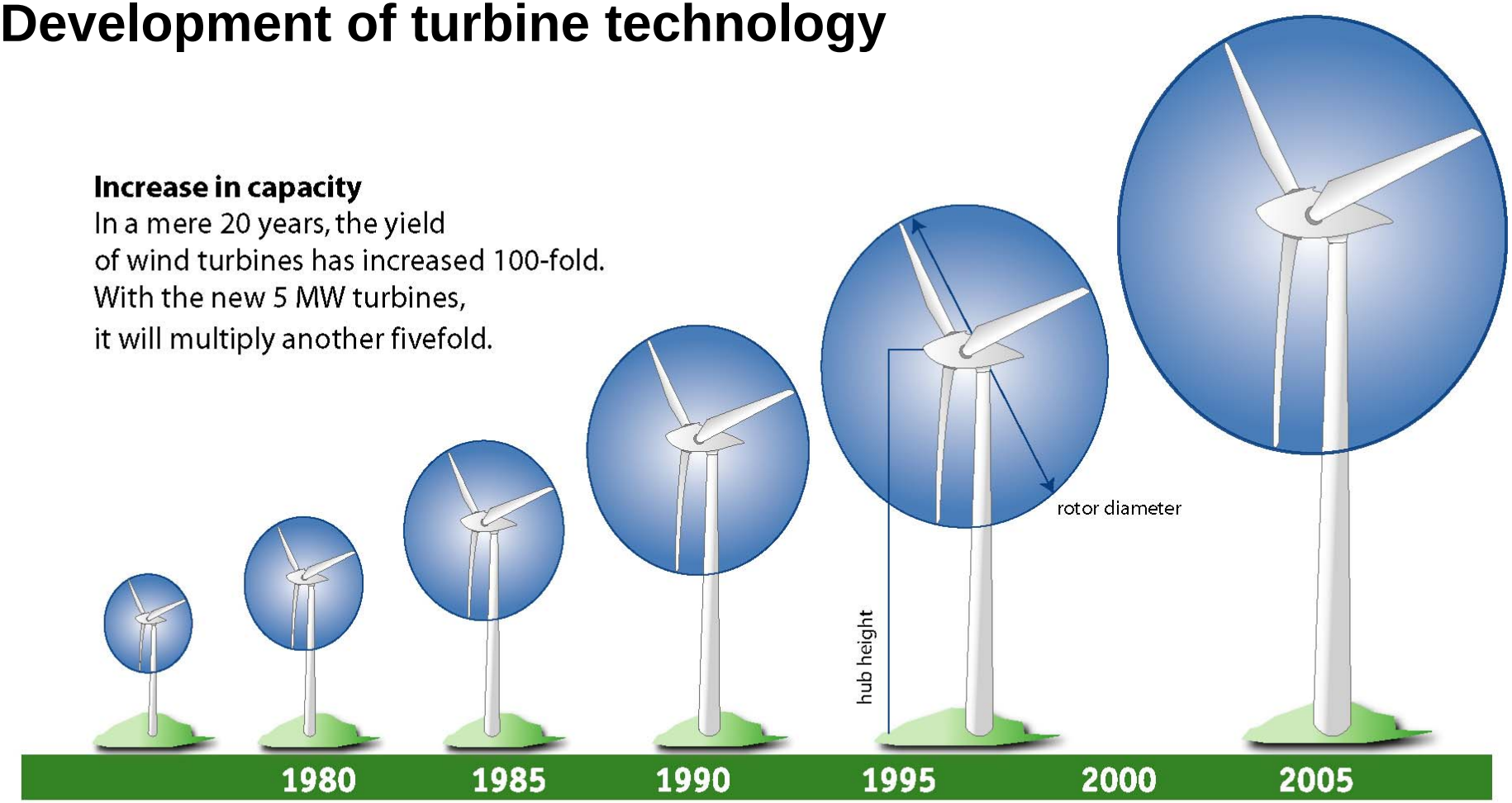
Source: EWEA, EPIA and Platts PowerVision

The Renewables Directive

- Mandatory national targets (overall + renewables in transport)
- Flexibility between Member States
- National Renewable Energy Action Plans
- Reduction of administrative and regulatory barriers, grid issues, etc
- Sustainability regime for biofuels

Increase in capacity and efficiency: Development of turbine technology

Increase in capacity
In a mere 20 years, the yield of wind turbines has increased 100-fold. With the new 5 MW turbines, it will multiply another fivefold.



	1980	1985	1990	1995	2000	2005
rated power :	30 kW	80 kW	250 kW	600 kW	1,500 kW	5,000 kW
rotor diameter :	15 m	20 m	30 m	46 m	70 m	115 m
hub height :	30 m	40 m	50 m	78 m	100 m	120 m
annual energy yield :	35,000 kWh	95,000 kWh	400,000 kWh	1,250,000 kWh	3,500,000 kWh	appr. 17,000,000 kWh

RES-E – positive impact on EU electricity prices

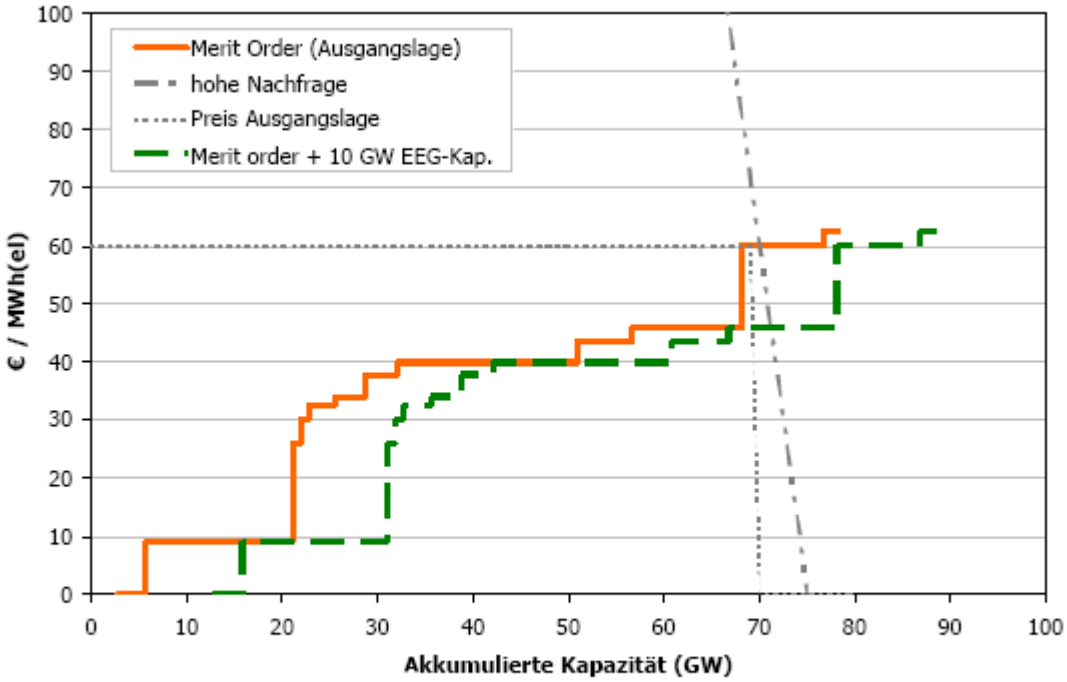


Figure 8: Impact of additional EEG capacity of 10 GW on the merit order

Source: Bode & Groscurth (2006): The effect of the German Renewable Energy Act (EEG) on "the electricity price", HWWA discussion paper 358

Next steps on renewables

- Consistant national action plans
- Good local and regional dynamics (covenant of majors – 100% renewable energies regions)
- Go ahead with off-shore wind
- Grid integration (at local and at cross-national level)
- Solar concentrated deployment in South

Renewable energies: a multilayer approach

Future policies must focus on:

- **decentralised energy in buildings** – maximising efficiency through integration of decentralised renewable energies into buildings
- **local and regional production** - taking advantage of the most locally suitable energy technologies (e.g. solar, CHP, hydro, wind)
- **key macro-level energy projects of European interest** – off-shore wind hubs (e.g. North Sea and Baltic), CSP solar thermal hubs (e.g. Desertec), biomass and CHP (combined heat and power installations), renovation of large existing hydro-electric installations

Delivering these projects will require the **necessary infrastructural investments** – e.g. super/smart-grid for electricity, including offshore

Integration of decentralised renewable energy technologies into buildings and building materials

Source: Bouygues Immobilier - Green Office

Green cities through
COVENANT of MAJORS INITIATIVE

There are already many examples of best practise in Europe. These need to be rolled-out as part of new strategic alliance between EU level and EU cities – so called COVENANT OF MAYORS INITIATIVE :

- Freiburg – urban planning and decentralised renewable energy (solar)
- Bremen – car sharing (Cambio)

Oeko Institut

- Paris/Luxembourg – 'soft mobility' plans; bike-sharing (Vélo cités)
- Strasbourg – public transport
- (Alstom, Bombardier)

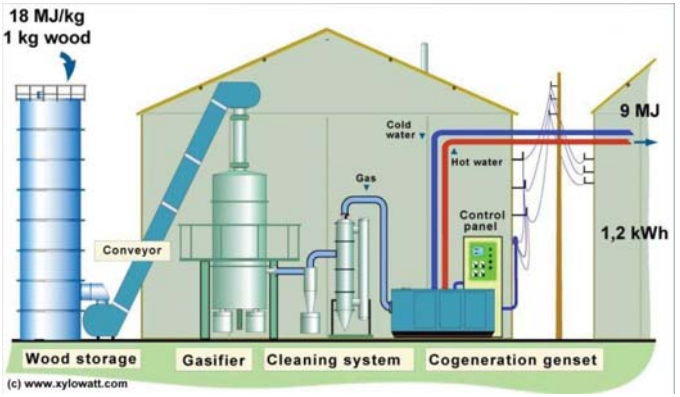
Green regions

There are already many examples of best practise in Europe. These need to be rolled-out as part of reform of **EU structural funds**:

- **Upper-Austria (AU)** – the biomass champion – built-up of hundreds of small biomass based district heating systems and of a wood pellets logistic chain
- **Galicia&Navarra (SP)** – the wind energy champions – more than 50% of electricity from wind enabled built up of wind companies (GAMESA)
- **Scotland (UK)** – investing heavily to become a hub for marine energies (off-shore wind, wave,sea currents, tidal)
- **Carinthia (AU)** – number 1 EU region in solar thermal heating devices with a substantial part of EU and world export market

Biomass and CHP (EU and Ukraine)

- Biomass accounted for 73.11 Mtoe in 2006 (6% of total EU final energy consumption)
- Target for 2020 is 175 Mtoe (12.7-13-9% of total EU final energy consumption) with real potential in ECE



- Conventional fossil fuel-fired power stations waste two-thirds of the energy they generate
- Switching to combined heat and power (CHP) plants located in towns or near industrial sites would enable this 'waste' heat to account for much of our heating needs
- CHP plants only take a few years to build

The North Sea
Europe's Power House

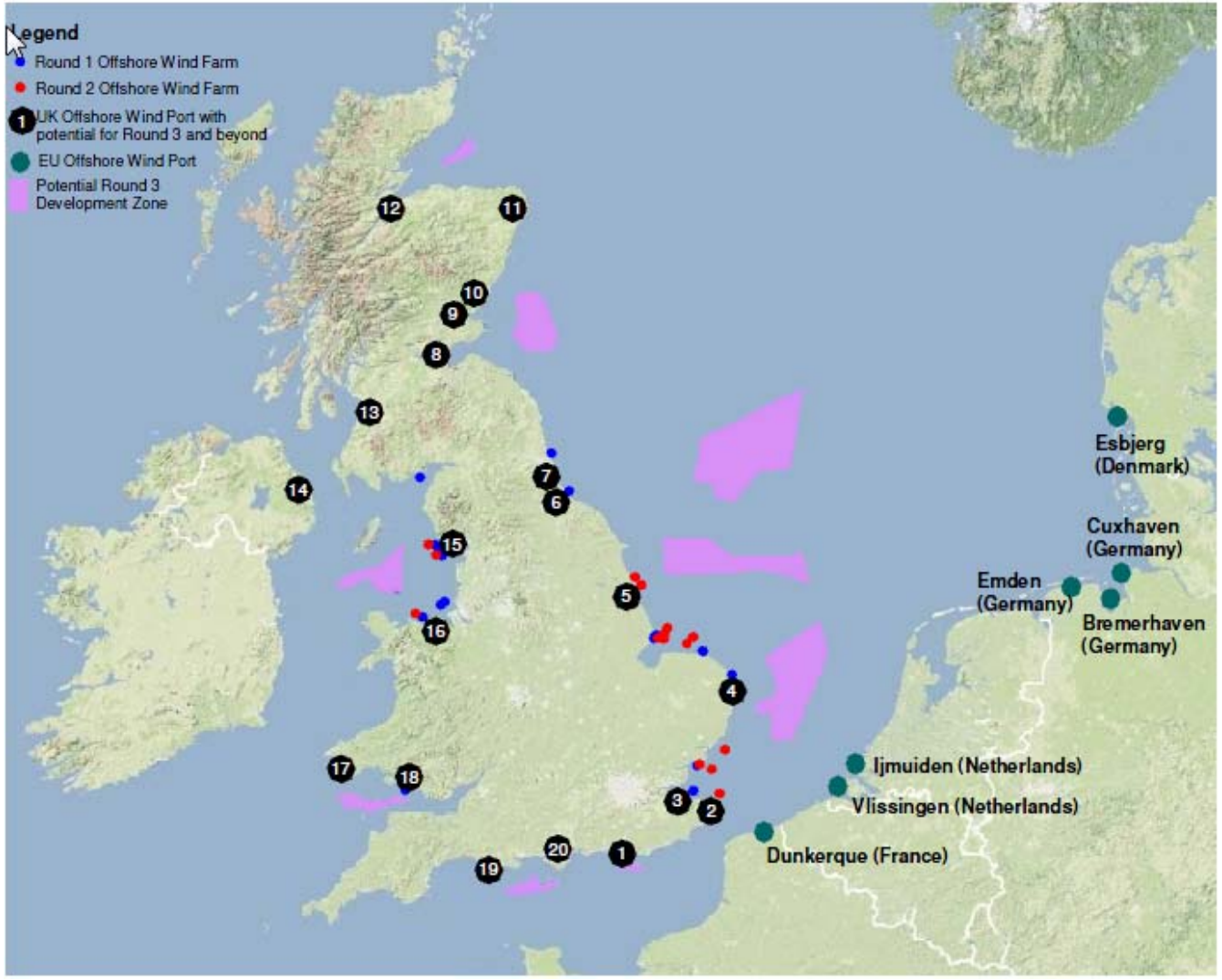
Offshore wind projects
major potential in northern Europe (North and Baltic Seas)

Recent OMA study on a North Sea 'Energy Super Ring' estimated a potential of 13,400 TWh of energy in North Sea alone

- Current EU electricity consumption is around 3,500 TWh.
- Current demand would be met and exceeded through 9 100 km2 wind farms.
- More energy potential than available fossils in Russia and Saudi Arabia

Source EWEA

Potential North Sea Offshore Wind Ports

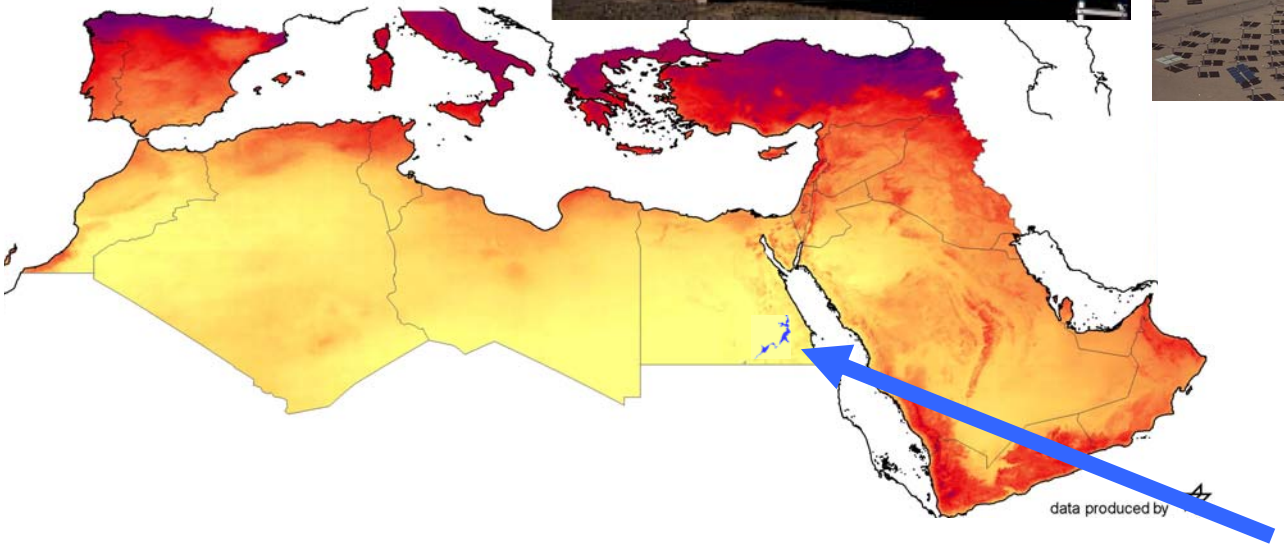


Source: EWEA, 2009

Logistics of Off-shore Wind -

the case of Bremerhaven (Germany)

Solar resources in the Middle East/North Africa region

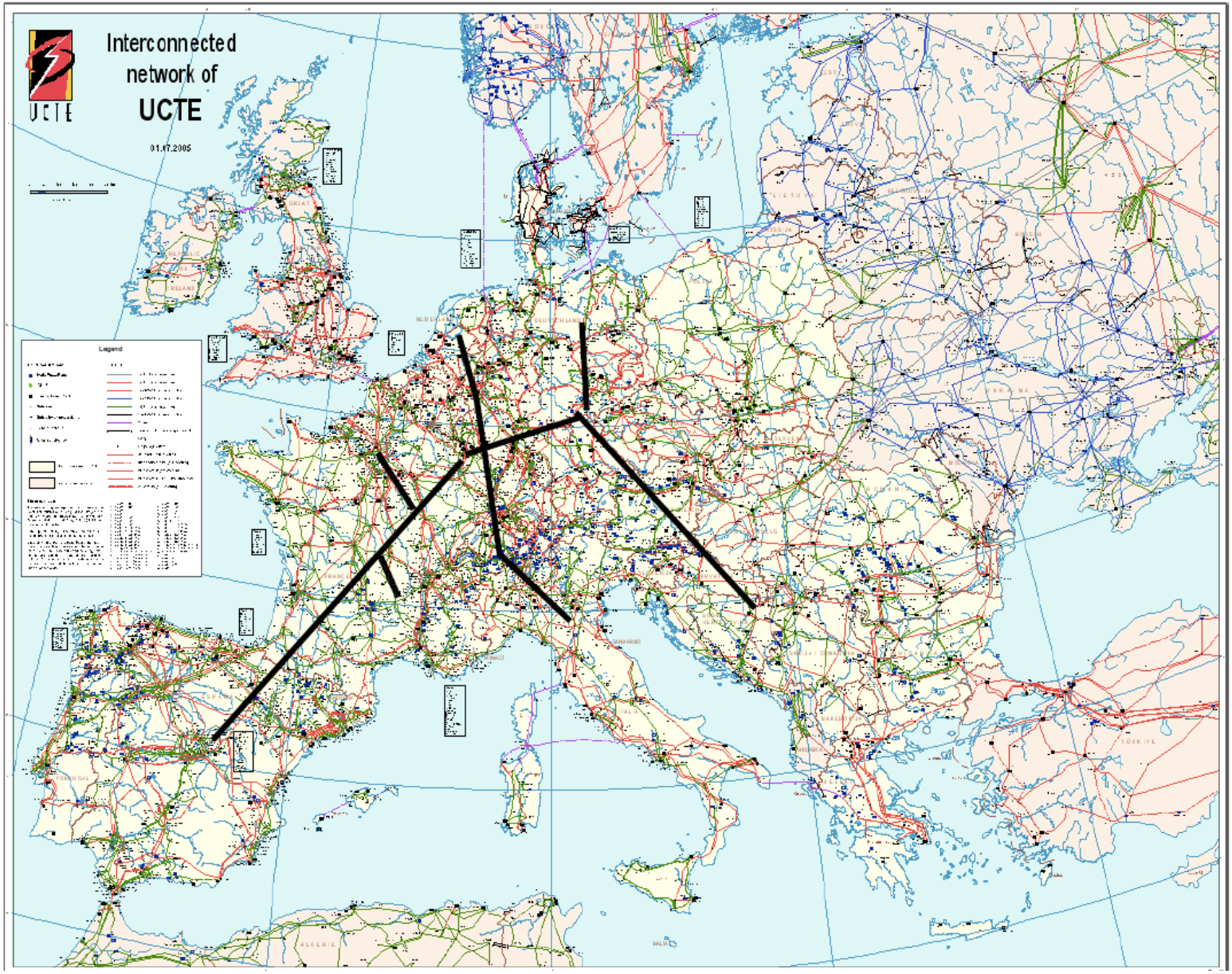


a solar thermal power plant of the size of Lake Nasser (Aswan) could harvest energy equivalent to the annual oil production of the Middle East

Open questions on renewables

- How much need for new grid building and what type of new grids (AC-DC)
- „Baseload power is going to become an anachronism" (Mr. Wellinghoff – new chairman US Federal Energy Regulatory Commission)
- A new challenge for balancing (storage plants), grid management and smart metering (IT in grids)
- What role for electro-mobility? (where to charge – at home or centralised?)

Strategic Interconnection Requirements



Energy Efficiency – EU's challenge for the next 5 years

- EU's biggest contribution to climate change, energy security and economic competitivity (reduced costs&exposure to volatility)
- New measures needed at EU level (binding minimum 20% target, new instruments e.g on financing)
- Buildings, transport & global goods = KEY

Next steps on energy efficiency

- Cars: decision on standard for 2020 (95 gr/km) to be decided
- Buildings: new legislation pending – from shallow to deep renovation
- Appliances, Office Equipment, Electronics:
  - On-going decisions on minimal standards and new decision on format of labelling
- Innovation needed above all on „organisational and societal“ level

Awareness that Buildings are central to solve energy &climate issues:

- Buildings use **40 %** of total EU energy consumption
- The built environment generates **1/3 of GHG in Europe**
- Even new buildings are far from being all energy efficient
- Replacement rate is very small (1 to 2 % per year)
- The renovation of the existing stock is a real challenge
- Many experiments are made but actual impacts are limited

We have a clear responsibility and objective :

to provide solutions NOW

for new and existing buildings

And at a very large scale

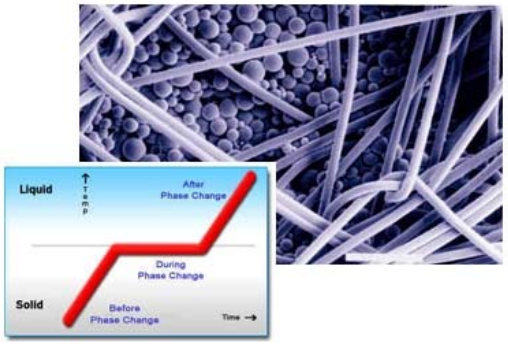
Boost research

A more efficient envelope :

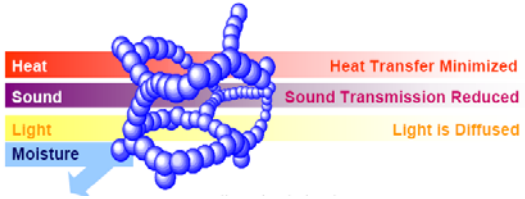
- Improved materials (insulation, glazing, energy storage)
- Bioclimatic architecture (natural ventilation, solar radiation, color, vegetation and water…)
- Improve design, new concepts

Better equipment and systems :

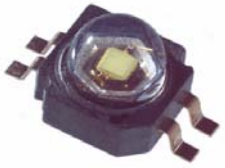
- Highly efficient HVAC equipment
- More efficient electric appliances
- Improved monitoring
- Stronger systemic approach



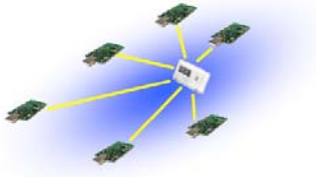
Phase Change Materials



Aero-nano gels



LED Lighting



Wireless Sensors Networks

Think Big: GeoClusters

GeoClusters are geographical areas with strong similarities in terms of:

- Climate
- Culture and behaviour
- Construction typologies
- Economic systems
- Gross Domestic Product

About 8 potential GeoClusters have been identified. They are basically transnational.

New business models – full life cycle responsibility

Life-cycle models have been developed and optimisation is reached by whole life costing.

With these data, construction elements are then selected for an optimum use, no longer for a minimum cost.

Using does not mean owning...

Home Office (London)

Areas for structured co-operation EU - California

- Regulation of energy markets
- Minimum standards for global goods
- « Deep renovation » and new building materials and concepts
- Renewables Energy Research and deployment
- Smart grid and behavioral changes
- Electro-mobility concepts

As if we had 4 planets …

Efficiency gains are not sufficient

VW Käfer, 1955

730 kg, 30 PS

110 km/h,

7,51/100km

VW New Beetle, 2005

1200 kg, 75 PS

160 km/h,

7,1 l/100km

Beyond Copenhagen

In order to achieve the necessary long term GHG reductions (90% reductions in industrialized economies until 2050), we need:

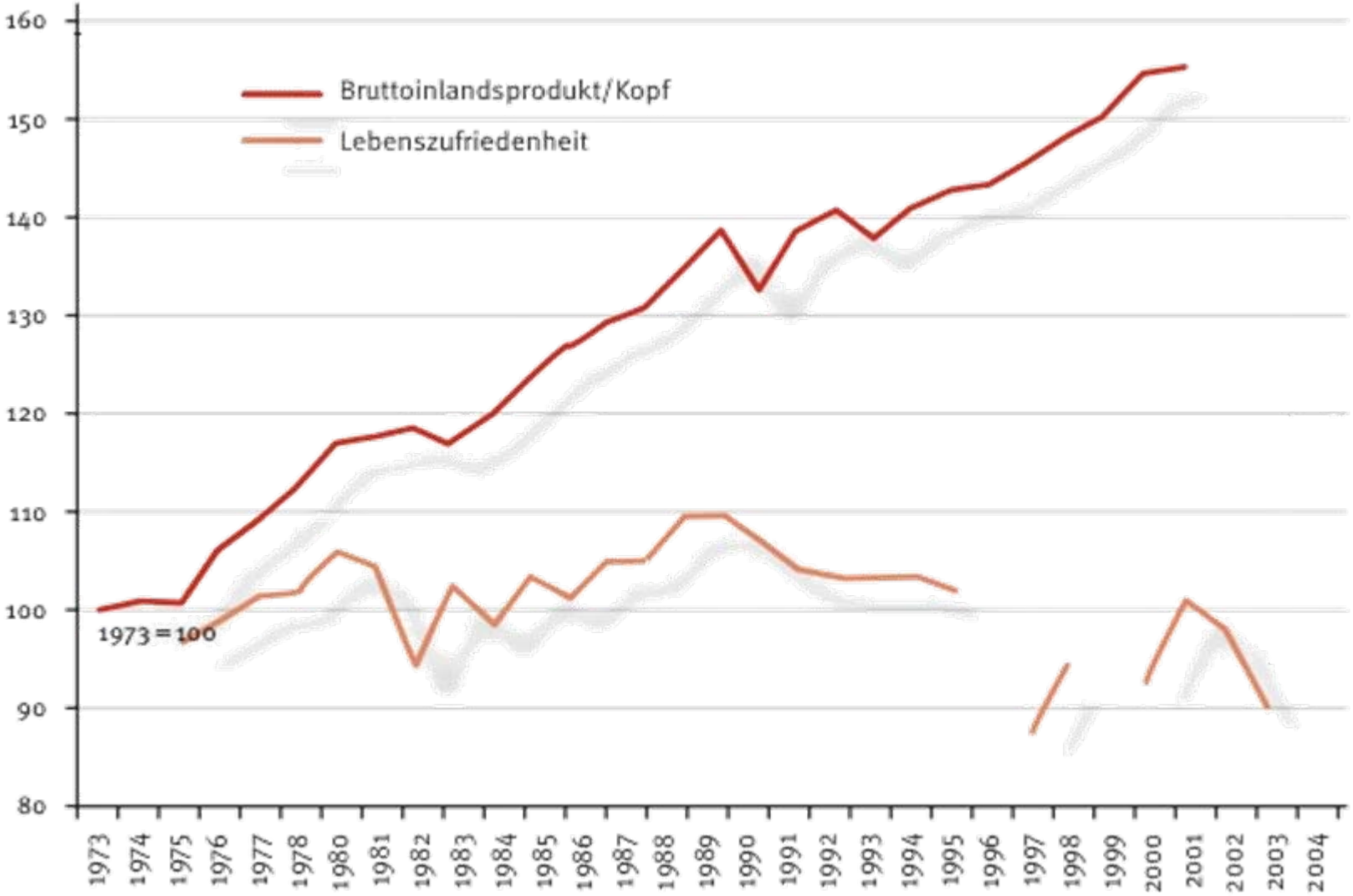
- **Technological and organisational innovation**
- **New Economic models**
- **Life Style Changes**

Beyond Copenhagen

We need a new economic model

- Limits of global and regional eco-systems accepted as limits for economic growth
- A better redistribution of wealth (between and inside societies)
- A new financing model for social security in aging societies
- New working time models

Wellbeing versus GNP

- 

Source: BUND 2008

Beyond Copenhagen

« An individual has not started living until he can rise above the narrow confines of his individualistic concerns to the broader concern of all humanity »

Martin Luther King in

« I have a dream », 1963

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Join us in the Green New Deal

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More information

- Preparations for Copenhagen:
  http://www.stopclimatechange.net/
  http://www.greens-efa.org/
- Limit of eco-systems: Denis Meadows, Mathias Wackernagel (global footprint network)
- New Economic Models: Paul Ekins, Hans Christoph Binswanger
- Personal development: Ken Wilber