Third International Workshop on Oil and Gas Depletion ASPO 2004 25/26 May 2004, Berlin

Statement
by Dr. Hans-Wilhelm Schiffer, RWE Power AG, Essen/Cologne,
at the panel discussion *How to cope with the future energy constraints - A European perspective*

Identification of the Constraints

- A sufficient energy supply at competitive prices is the key to economic development.
- In the next few decades, too, fossil energies - despite their limited reserves - will have to meet over 80 % of the global and the European energy requirements.
- As global oil and gas reserves are concentrated in the Middle East and Russia, significant importance is to be attached to ensuring security of supply.
- Limiting energy-related CO_2 emissions is one of the central elements in a strategy aimed at preventing climate changes.

Energy Policy is Economic Policy

Problem outline

- Energy supply is the key to prosperity and employment.
- In energy-intensive production sectors, energy costs exert significant impact on competitiveness.
- High energy prices burden private household budgets.

Solutions

- Energy must be made available at internationally competitive prices. The state has to define the parameters of competition.
- No artificial energy price increases but productive use in sectors which are subject to international competition.
- State actions must not distort competitive relationships between energy sources.
- *YES* to subsidies aimed at promoting new technologies expected to reach market maturity, but *NO* to permanent subsidies.

Energy mix in free competition; no quota arrangements

Resource Preservation is Important Element in Sustainable Energy Supply

Problem outline

- Static oil and gas reserves are limited to about 40 and 60 years, resp. Only coal has a much higher range of some 200 years.
- Resources are larger by a factor of 10. Their exploration, however, calls for higher prices and technological progress.

Solutions

- Efficiency improvement in energy use.
- Further development of the technologies applied along the energy supply chain.
- Preservation of particularly scarce resources.
- Preferred use of energies in applications where they have comparative advantages.
  - Oil in transport
  - Gas in the heat market
  - Nuclear energy and coal in power generation
  - Renewable energies as additional feedstock

  in power generation.and in the heat market.

Renewable energies will be no alternative in the foreseeable future.

Security of Supply Gaining Increasing Importance

Problem outline

- Increasing concentration of power among energy raw material suppliers.
- EU energy import quota increasing from today‘s 50% to two thirds in 2030.
- Price risks growing.

Solutions

- Avoiding unilateral dependence on supply sources.
- Ensuring reliable underlying conditions, so that long-term investments in energy infrastructure are made at the appropriate time.
- Making optimum use of competitive domestic energies (oil and gas production on the decline in Europe); therefore, stabilization of coal and nuclear energy at least.
- Adjusting promotion schemes for renewable energies such that market maturity is reached via efficiency improvement incentives.

Maintenance of a balanced energy mix restricts market supply risks.

Isolated European Climate Protection Efforts will have a Counteractive Effect

Problem outline

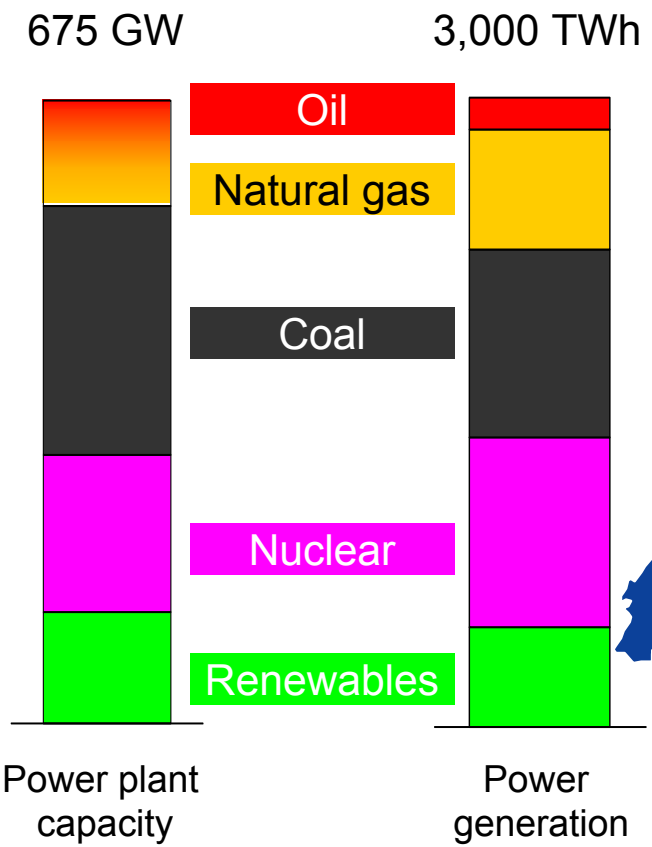
- Population rise and higher economic performance induce global growth in energy consumption.
- Increase in energy consumption leads to rising green-house gas emissions – particularly in developing countries.

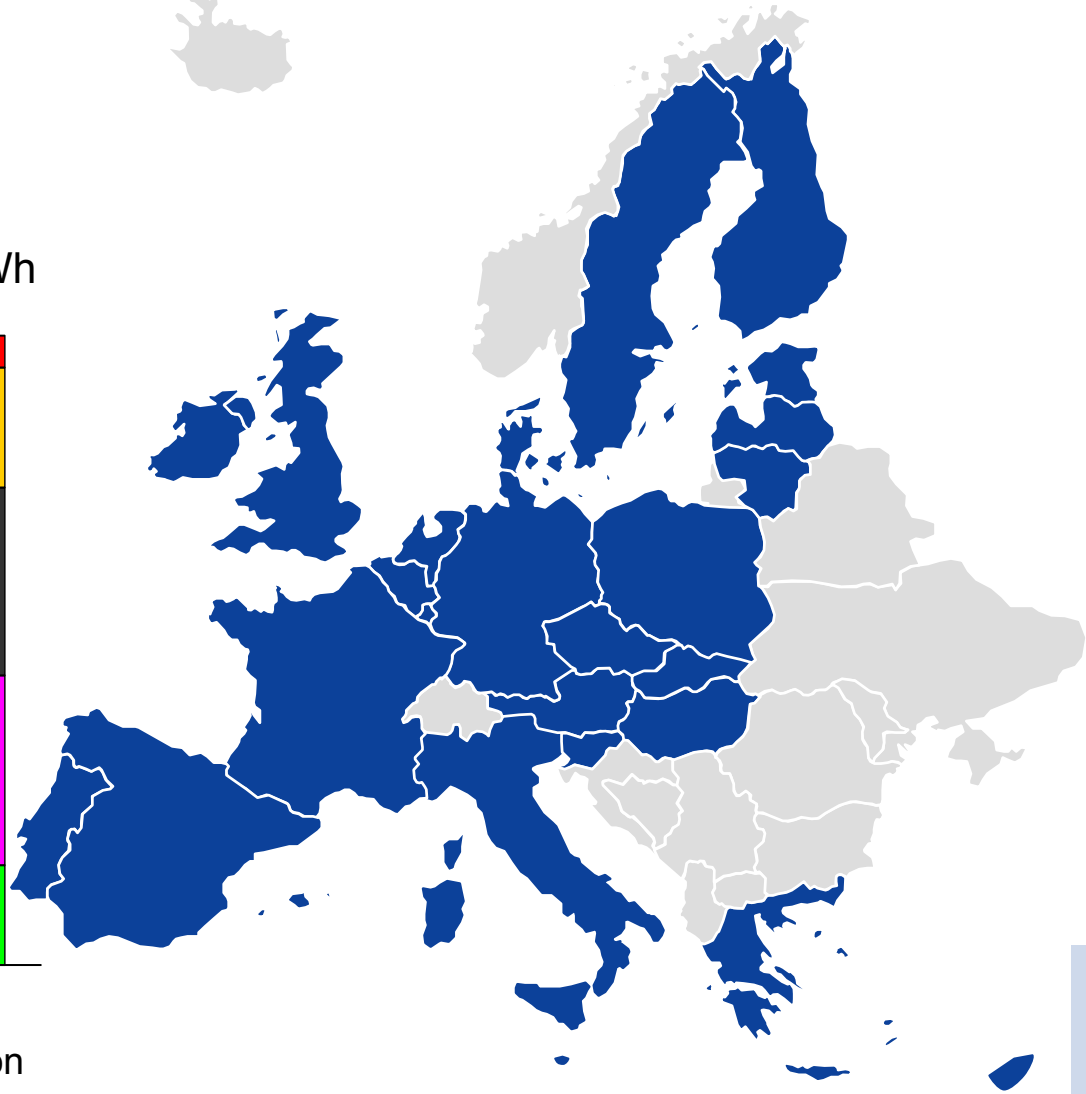
Solutions

- Preference to pursuit of measures involving minimum CO_2 avoidance costs.
- Efficiency improvement strategy instead of replacing energy sources.
- Further development of coal-based power plant technology involving the vision of zero-CO_2 power generation.
- Know-how transfer to developing countries.
- Avoidance of pseudo-savings in CO_2 through the relocation of CO_2-intensive production processes to plants outside Europe.
- No up-front sacrifices which benefit industrial locations and jobs in countries outside Europe.

Climate policy needs a re-alignment with all important countries being included and moderate emission limitation goals and fair burden sharing.

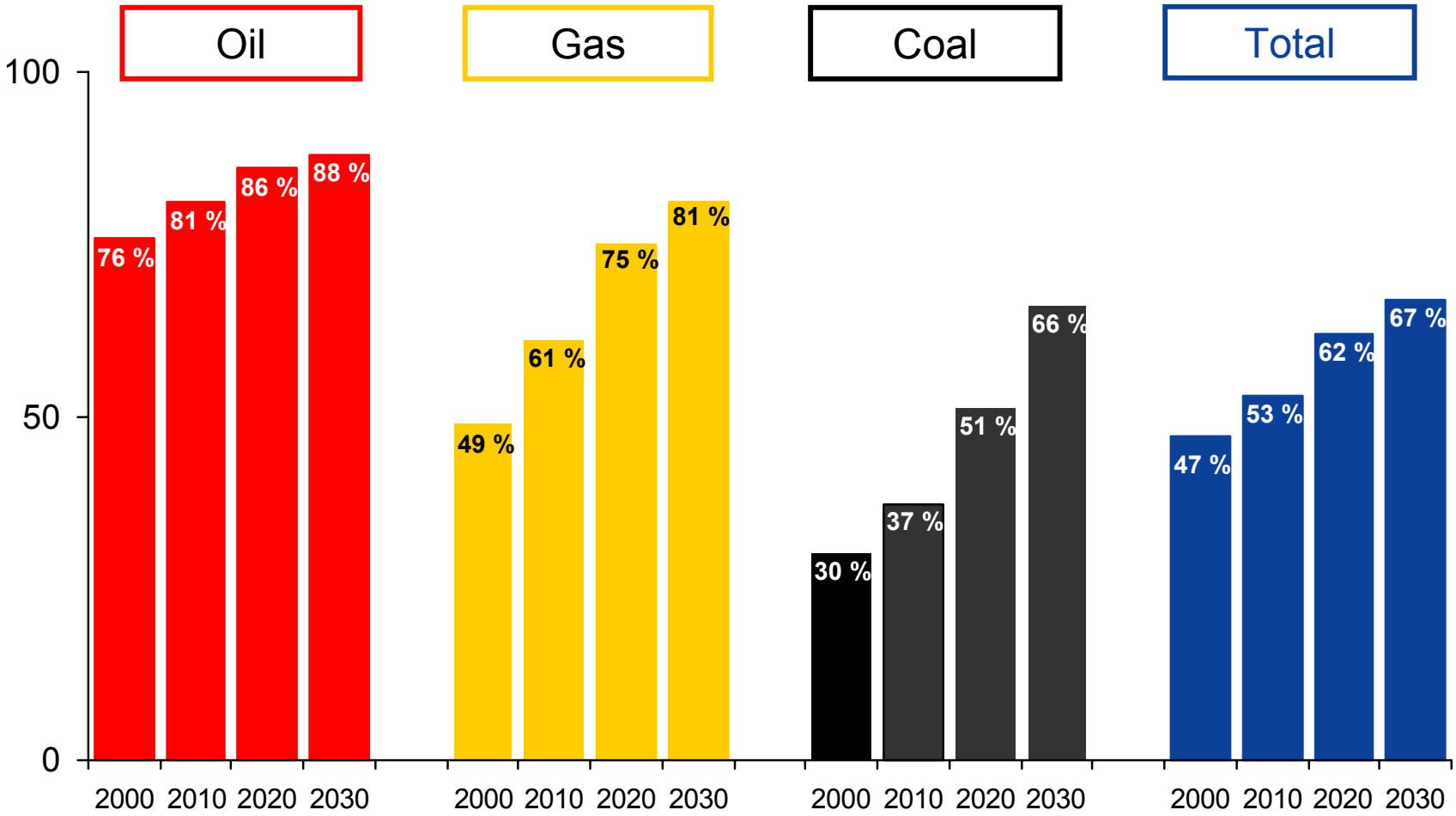
Power Generation Structures in EU-25, 2004





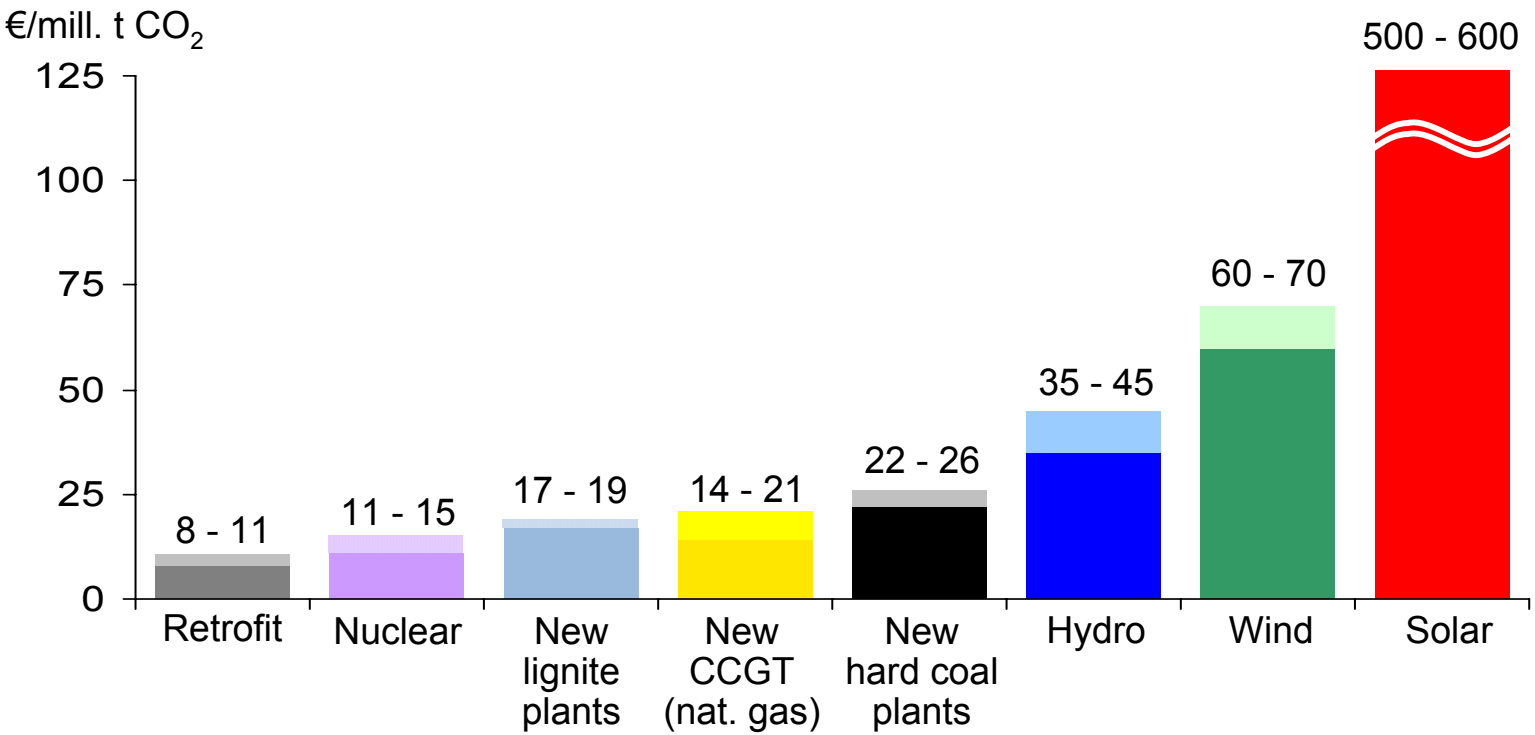
Source: European Commission, European Energy and Transport Trends to 2030, Brussels 2003; own calculations

Dependence on Imported Energy, EU-25



Source: European Commission

Specific CO_2 Avoidance Costs of German Power Generation*

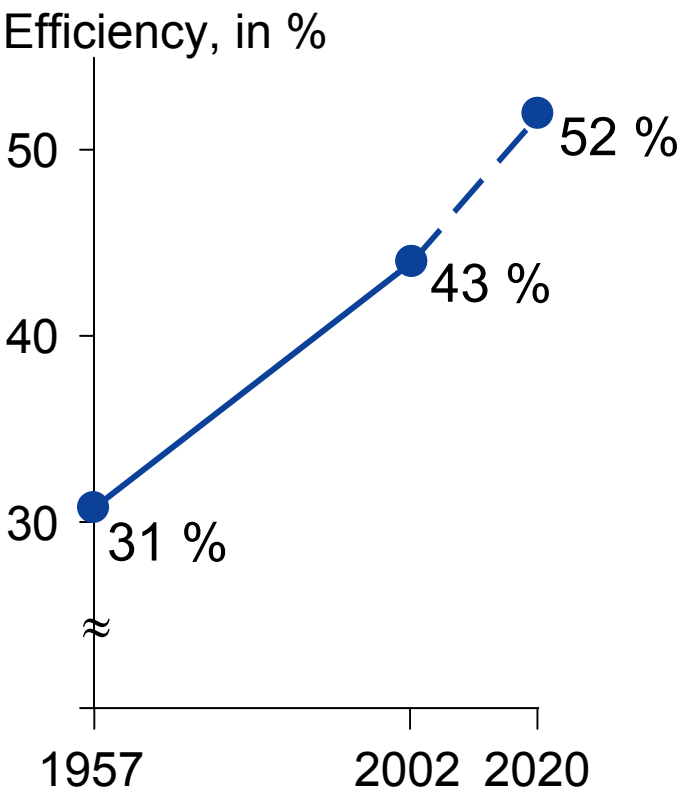


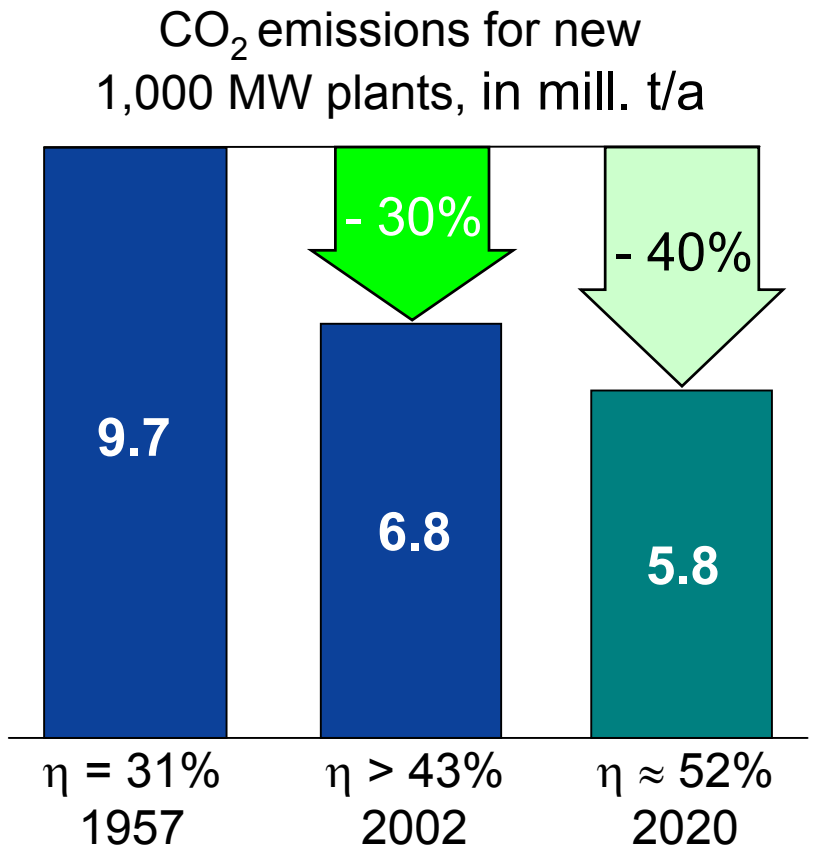
* 2002 prices based on old lignite units (accounting for fuel price risks associated with imported energy; subsidies not considered for renewables).

The construction of new nuclear power plants as well as coal and gas power plants is a cost-effective way to reduce CO_2 emissions

CO_2 Reductions due to Power Plant Renewals

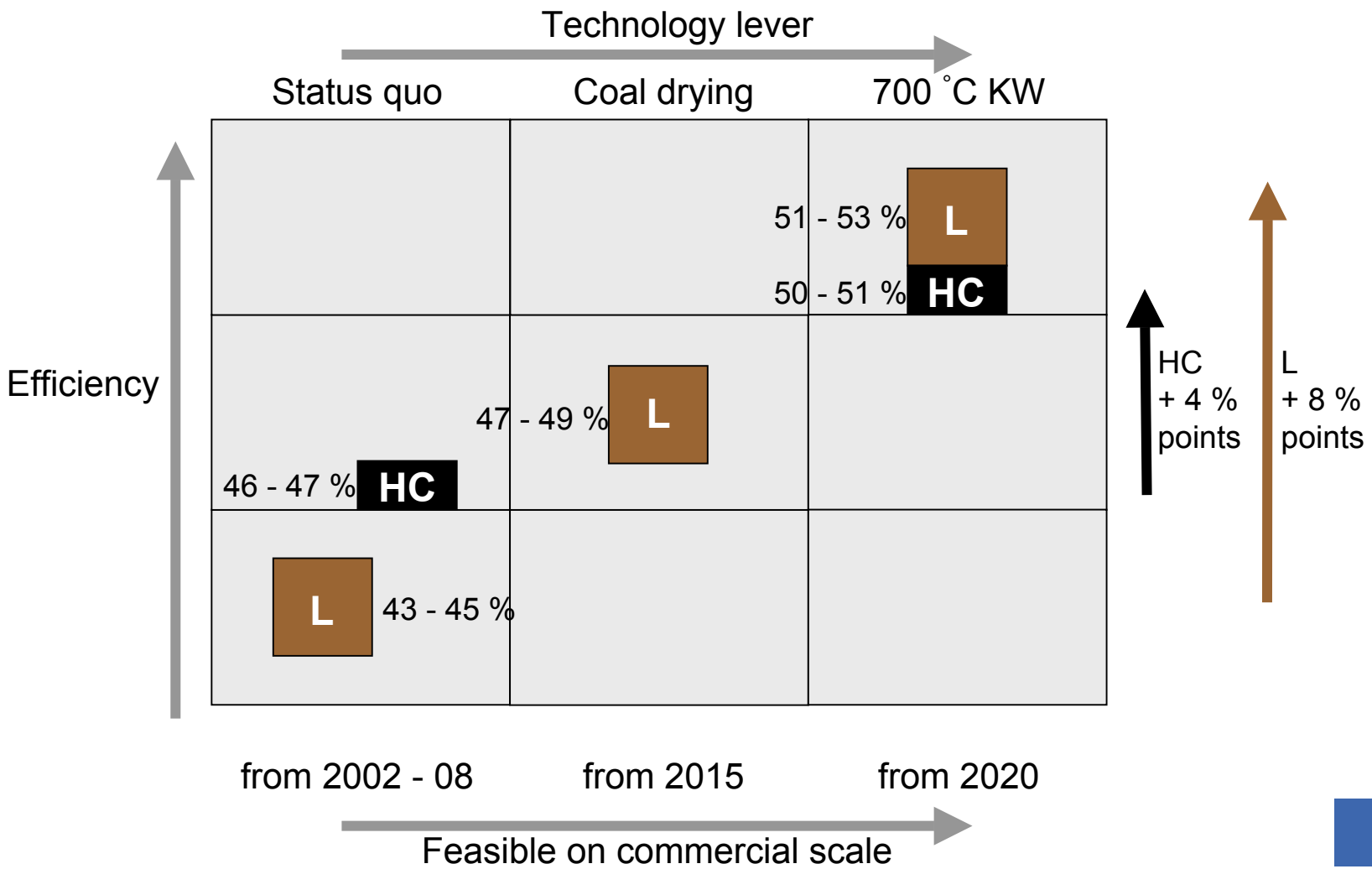
Example: Lignite in Germany



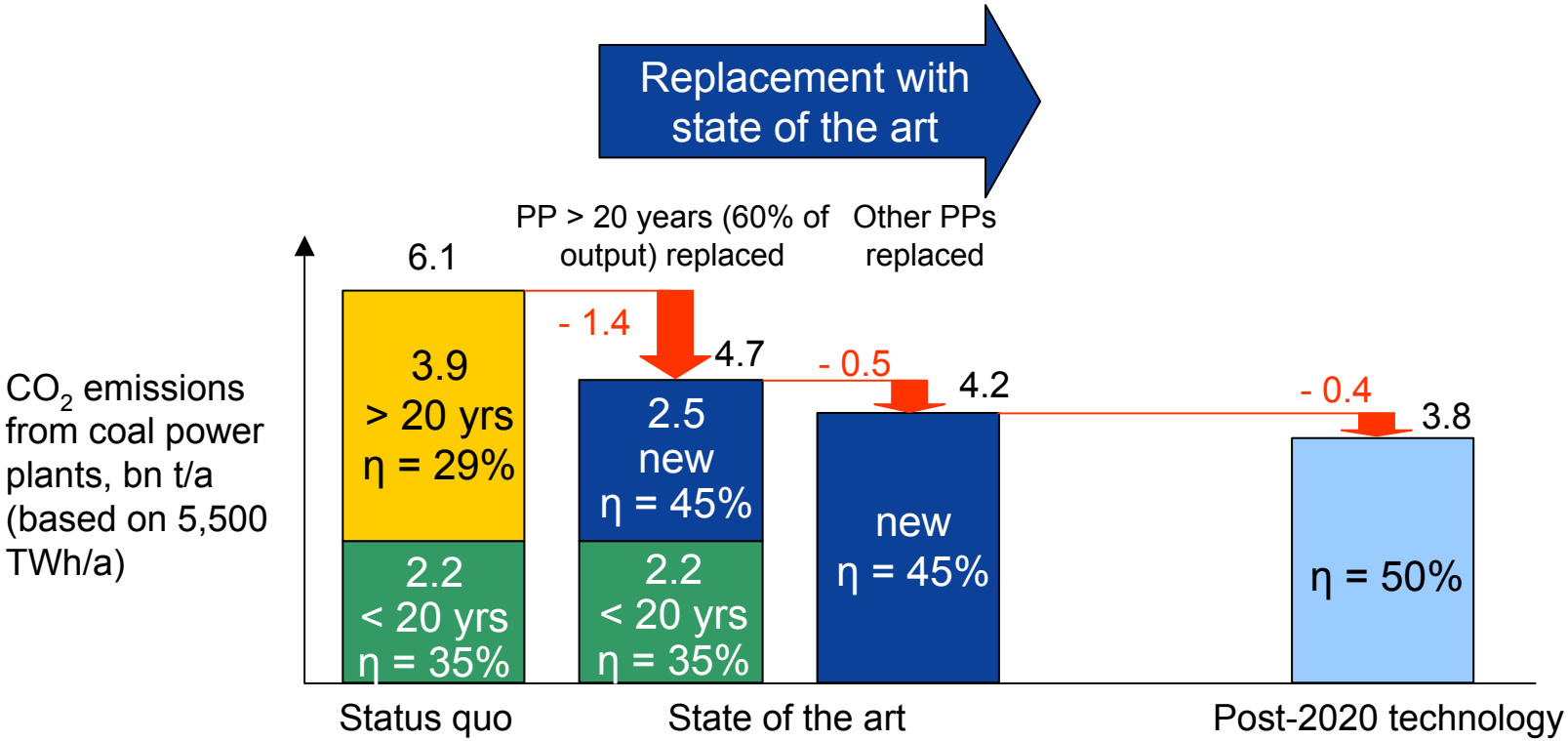


Effective climate protection from exploiting technical efficiency-increasing potentials

Development Horizons
Lignite- and Hard Coal-Fired Power Plants



The Cost-Effective Road to Global CO_2 Reductions: Improved Efficiency

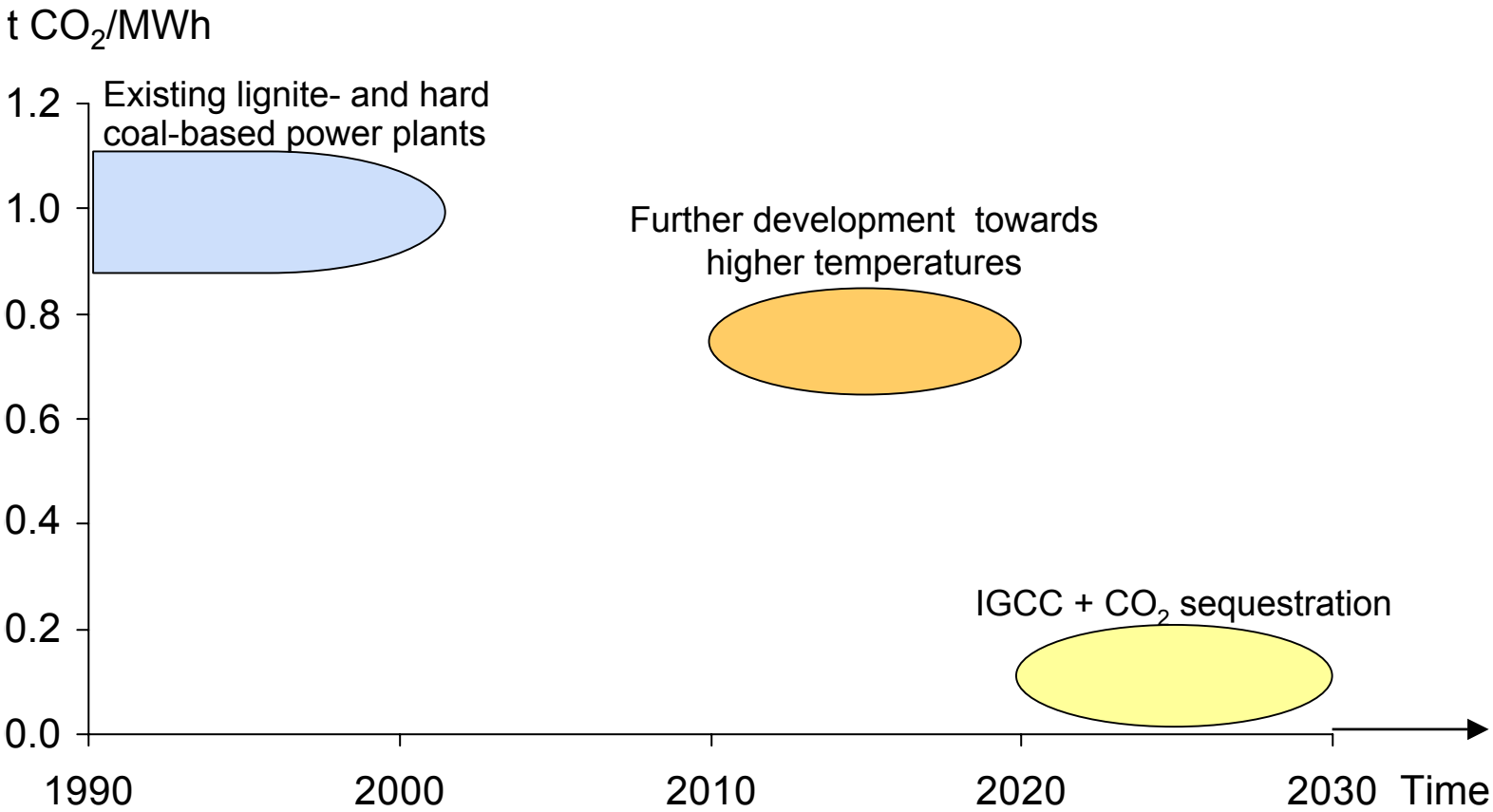


Investment	€ bn	500	330	830
Coal savings	mill. tce/a	500	150	150
Avoidance costs[1)]	€/t CO_2	approx. 20	approx. 50	approx. 180

[1)] Capital costs minus coal savings (€ 16/t CO_2)

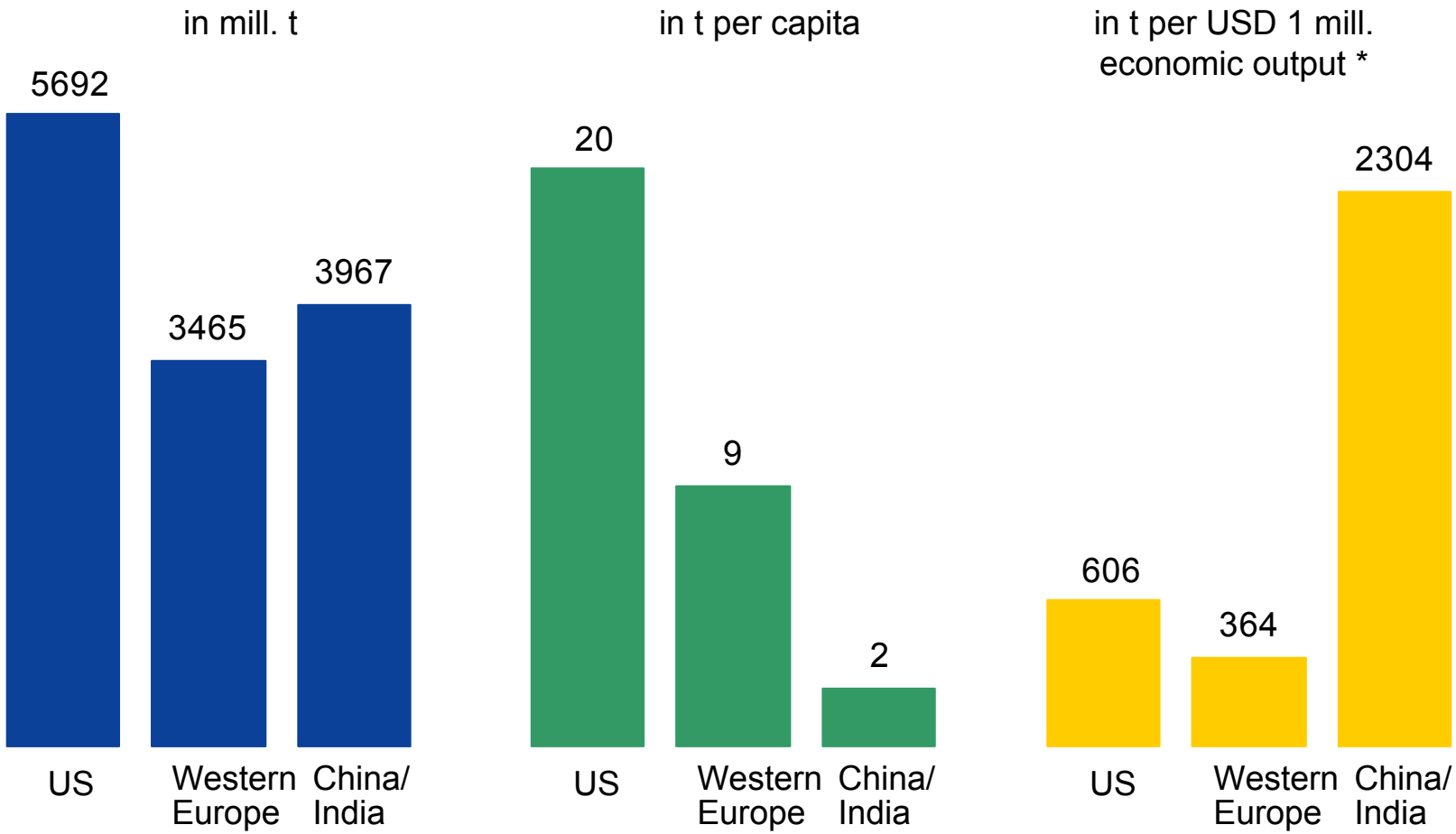
Replacing all old coal power plants with useful lives exceeding 20 years would reduce CO_2 emissions by 1.4 bn t/a.

The Road to Zero-CO_2 Coal-Fired Power Plants



Research activities aimed at zero-CO_2 coal-based power plants require political and economic support

CO_2 Emissions in 2001



* Gross domestic product in 1997 USD

Source: Energy Information Administration/2004 International Energy Outlook