

Vulnerability of Europe and its Economy to Energy Crises

2nd South East Europe
Energy Dialogue
Thessaloniki,
21-22 May 2008





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Vulnerability

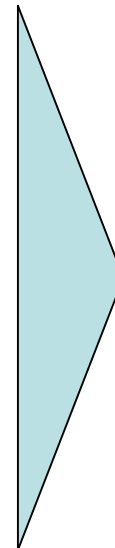
- Discussion of security of supply in the framework of liberalised electricity and gas markets
- Is an assessment of the vulnerability of the European economy possible?
- What are meaningful indicators to measure the vulnerability?
- Can conclusions be drawn to give recommendations to politicians?



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Indicators of Vulnerability

- Europe: EU-27 + Switzerland + Norway
- Vulnerability is a multi-dimensional quantity:
Variety of influence factors
- Energy dependency/independency
- Costs of energy imports
- Price volatility
- Exchange rates (US-\$ vs. €)
- Technology
- International relationships
- Political and regulatory influence
- Storage of energy
- Facilities of energy transport
- ...



Definition of vulnerability indicators is possible

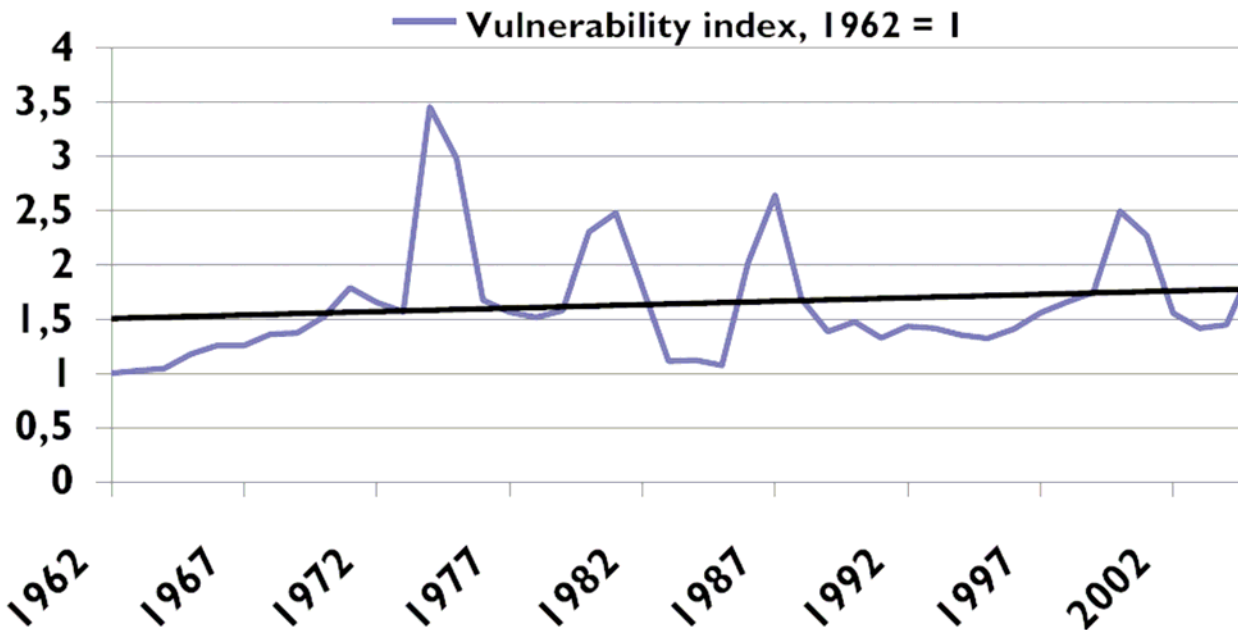
- for different sectors
- for different energies
- market related:
Supply & Demand
- Macro-economically
Costs & Prices



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Result

EU-15 long-term vulnerability index
1962 - 2005

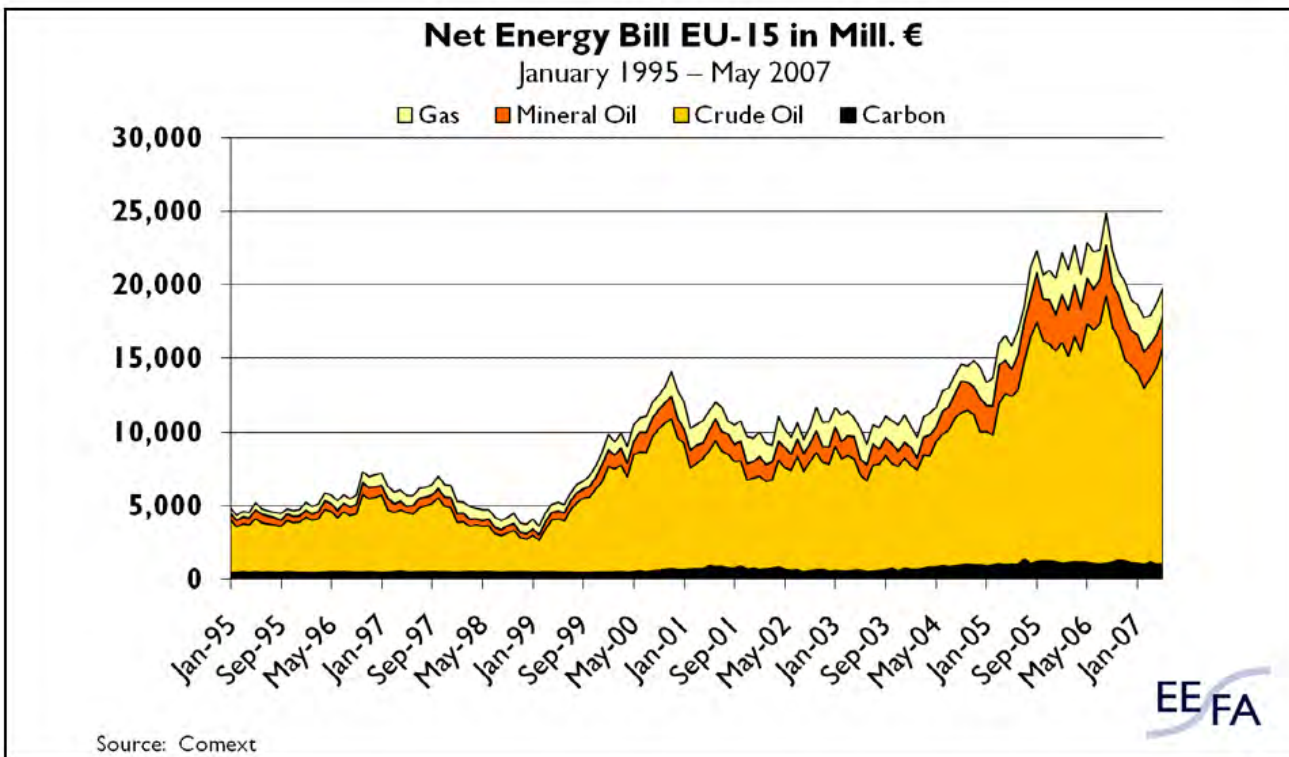


The long-term index of vulnerability shows a growth trend. Within the EU-15 its value doubled in comparison to 1962, but has not yet reached the critical values as in the early 1970ies (oil price shock).



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Net Energy Bill EU-15

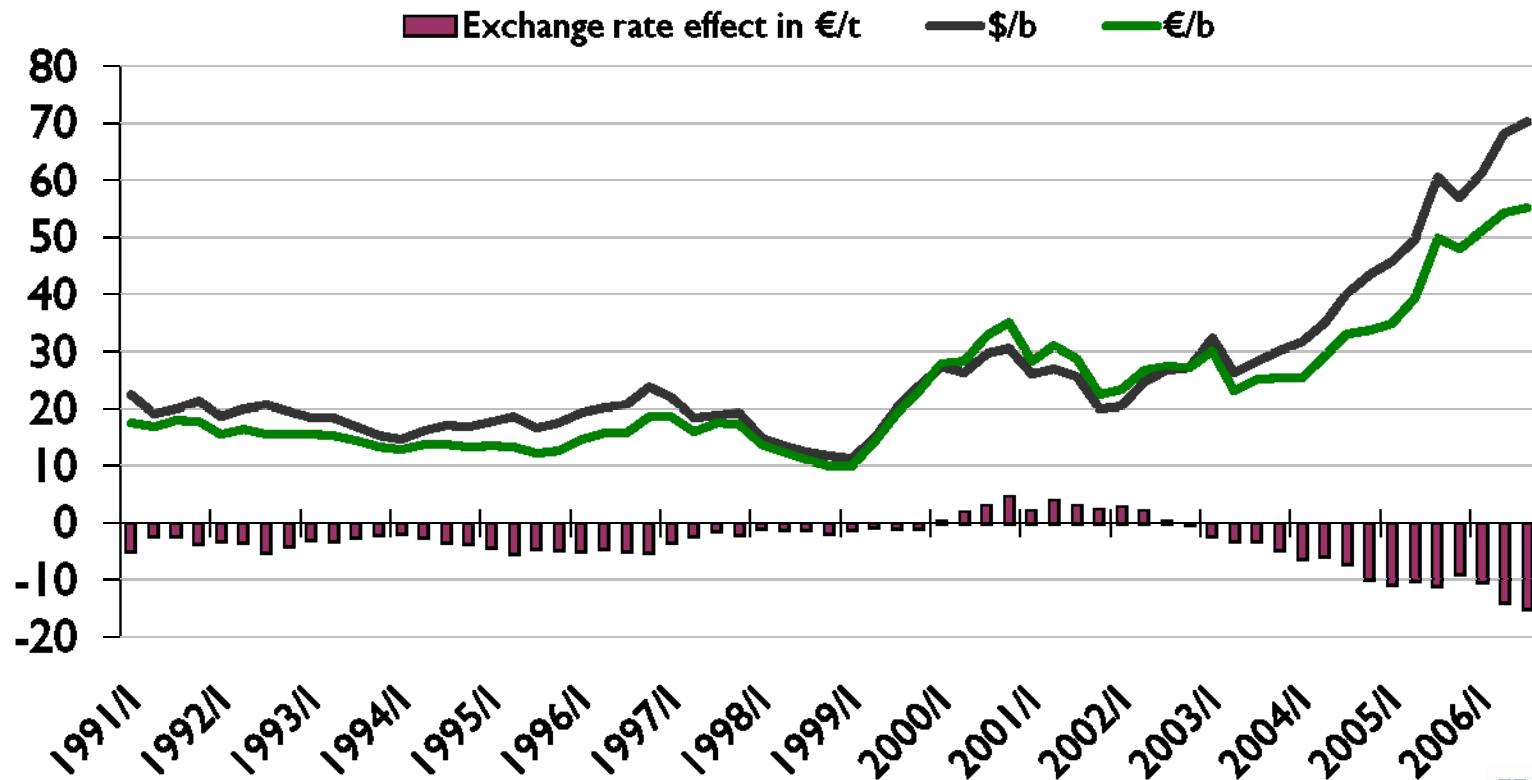


The current bill shows a 4-times higher value than in 1995 due to the enormous increase of both – market prices of the energy commodities and demand for energy



Price development of crude oil and exchange rate effect

1st quarter 1991 to 3rd quarter 2006



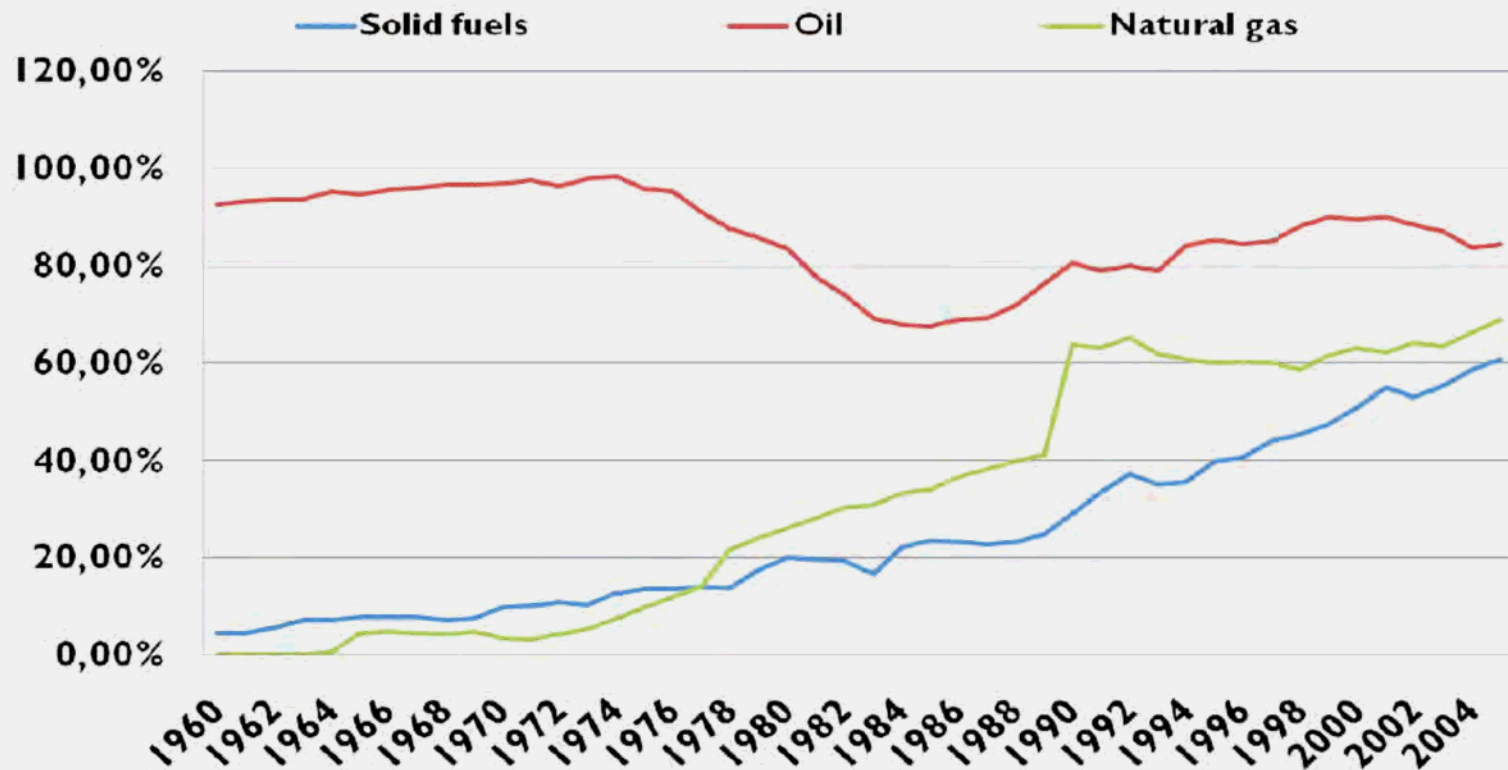
Source: own calculations based on data from BAFA



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Import dependency EU-15



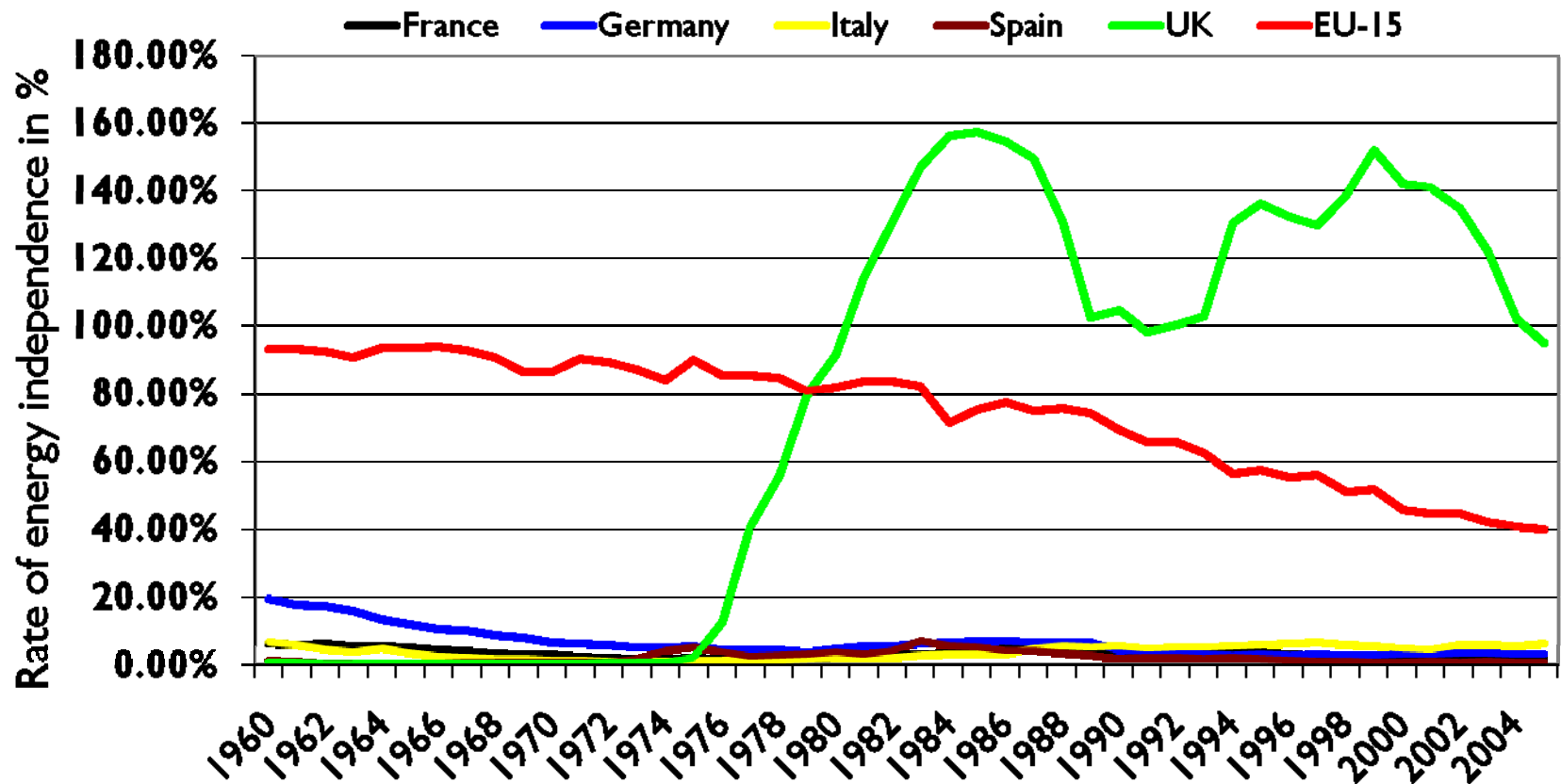
Source: own calculations based on data from EUROSTAT

EEFA



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Energy independence of crude oil 1960 - 2005

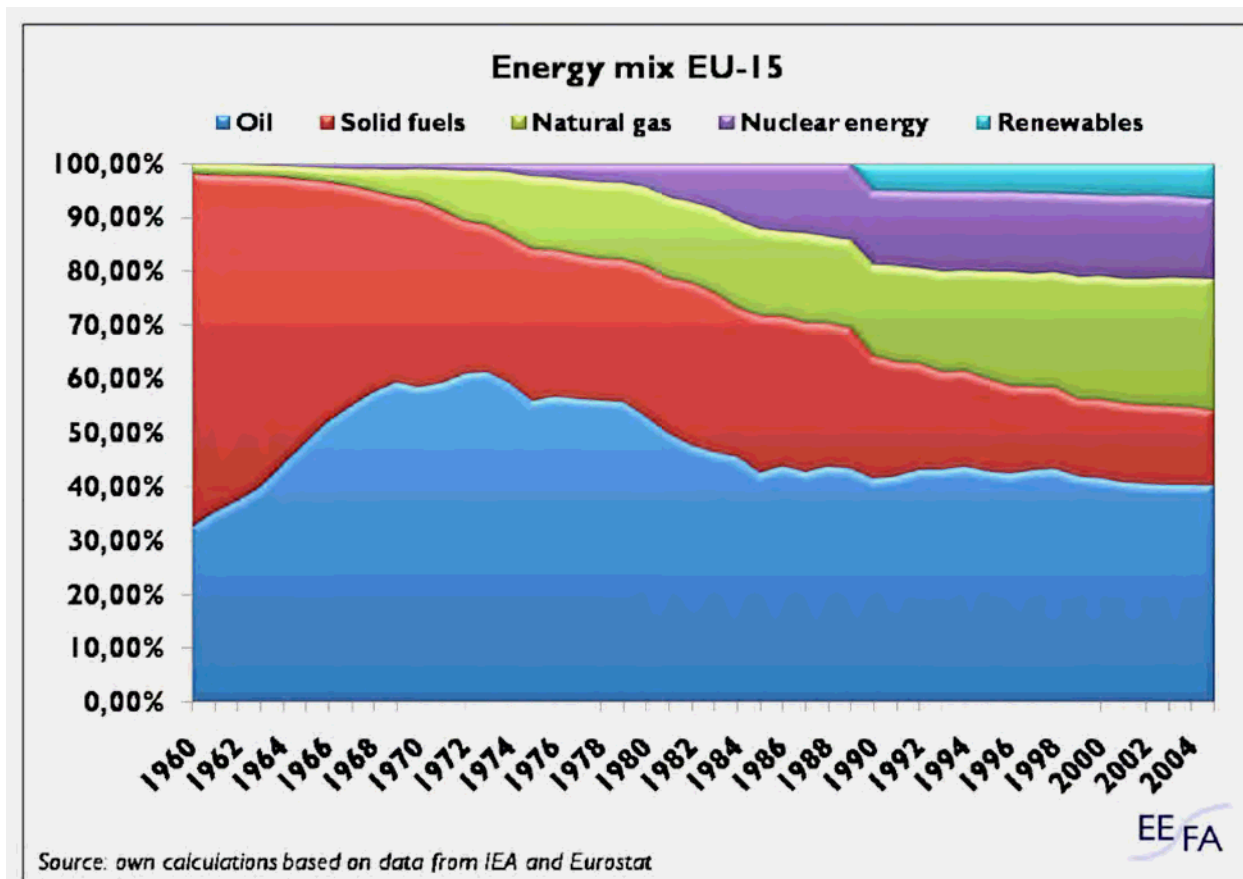


Source: own calculations based on data from EUROSTAT



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Energy Mix of the EU-15

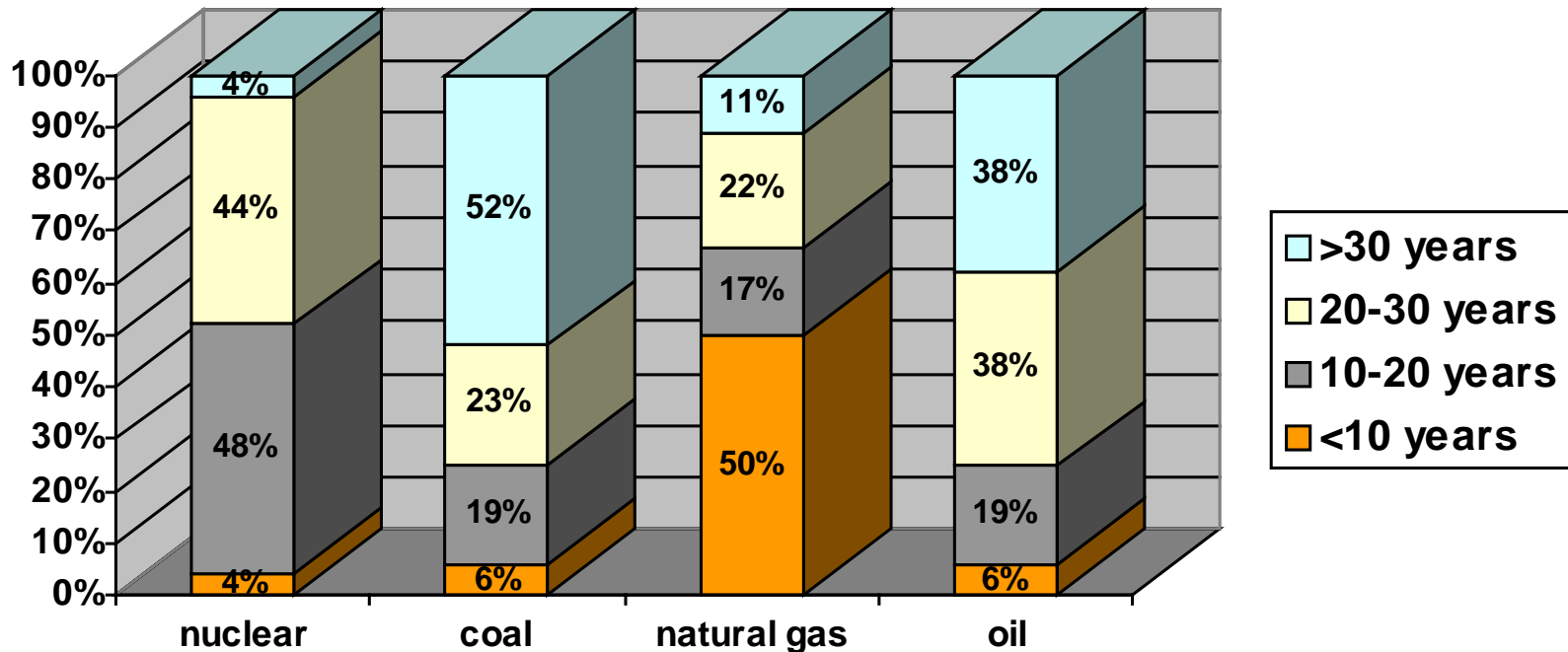


- Energy mix within the EU-15 broadened:
Reduced risk
- But: Some of the new energy sources show high price volatility (e.g. gas) or production volatility (e.g. renewable)



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Age structure of the installed capacity in the EU-29



Especially oil and coal plants have reached a substantial share of old plants that needs to be replaced.



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Recommendations for Policy Makers

- Enhance the level of policy co-operation in Europe
- More pragmatism in policy implementation
- Enhance the promotion of energy efficiency and market for renewable energies
- Mitigate tensions level in electricity and gas markets
- Encourage further diversification in each national energy mix
- Re-integrate the nuclear option in policy and public debate
- Achieve more consistent and targeted R&D policies for new technologies
- Promote a “fact based” debate on energy issues
- Encourage the European countries to assess their vulnerability level by applying the vulnerability indicators, as proposed by this study.



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CONSEIL MONDIAL DE L'ENERGIE

World Energy Council

1-4 Warwick Street, London W1B 5LT

Tel: 020-7734 5996

Fax: 020-7734 5926

E-mail: info@worldenergy.org

Website: www.worldenergy.org