



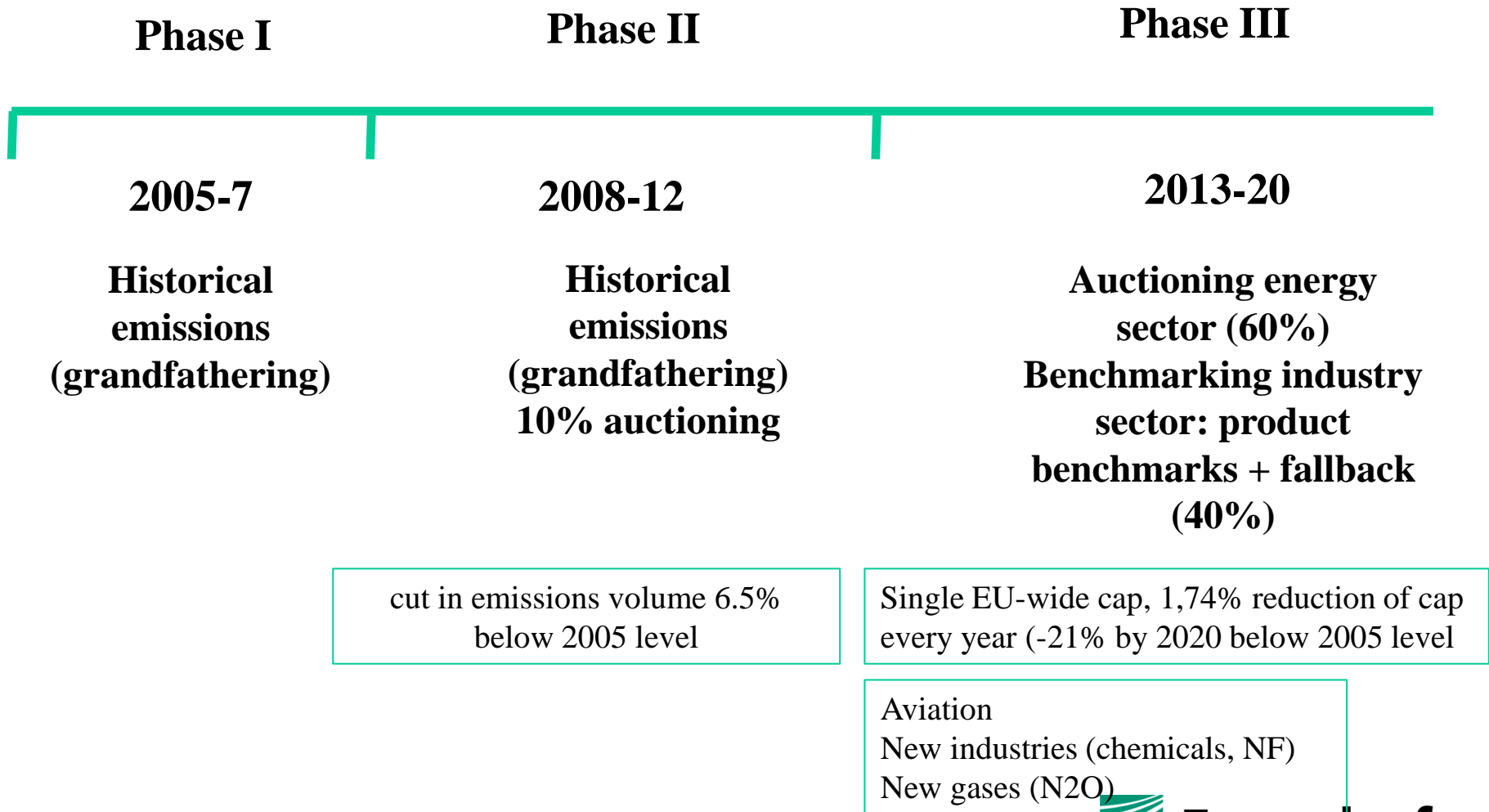
Third meeting of the project  
“Monitoring of EU and national energy  
efficiency targets” (ODYSSEE-MURE 2010)  
Warsaw, 6-7 October 2011

# Identification of energy savings in the EU ETS sectors through top- down indicators (*Task 4.3*)

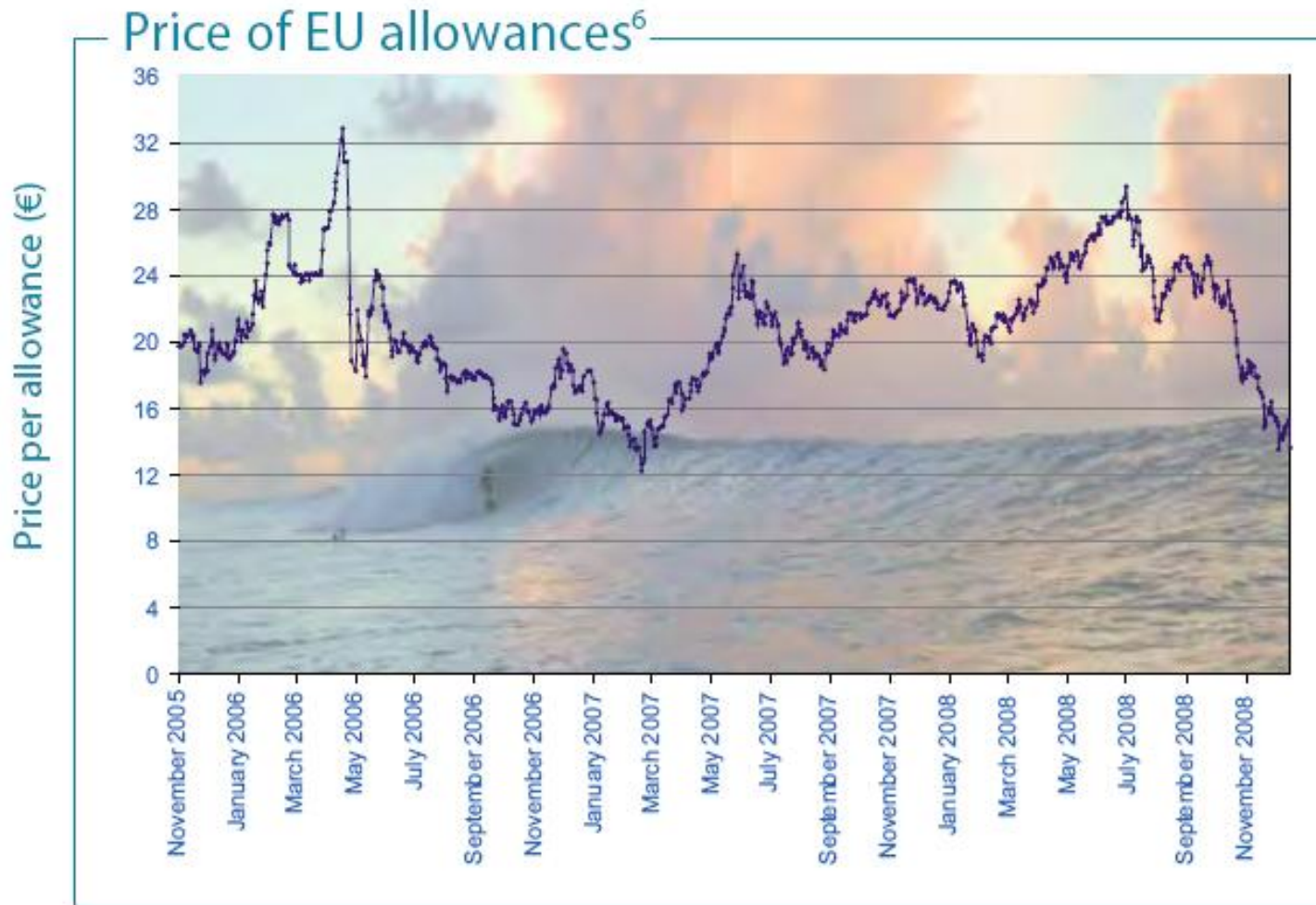
Wolfgang Eichhammer, Fraunhofer ISI

# Introduction: The EU ETS

- Three phases



# Price of 2008 allowances



<sup>6</sup> Allowances for 2008

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# Possible impacts of the EU ETS

## ■ Industry sector

- Fuel efficiency improvements in industry branches concerned by EU ETS
- Electricity efficiency improvements in ALL industrial branches due to the integration of CO<sub>2</sub> prices in into electricity prices
- Enhanced fuel shift towards less CO<sub>2</sub>-intensive fuels: more natural gas and electricity; increased penetration of renewables in ETS-Industries
- Reduction in production volumes (due to the shift of production volumes outside Europe)

## ■ Energy sector

- Energy efficiency improvement in electricity generation by fuel (gas...)
- Enhanced penetration of more efficient power plants: more efficient fossil power plants (in particular gas plants), enhanced penetration of renewables into electricity generation
- Reduction in the demand for electricity across ALL sectors due to the integration of CO<sub>2</sub> prices in into electricity prices
- Change in the dispatch of power plants

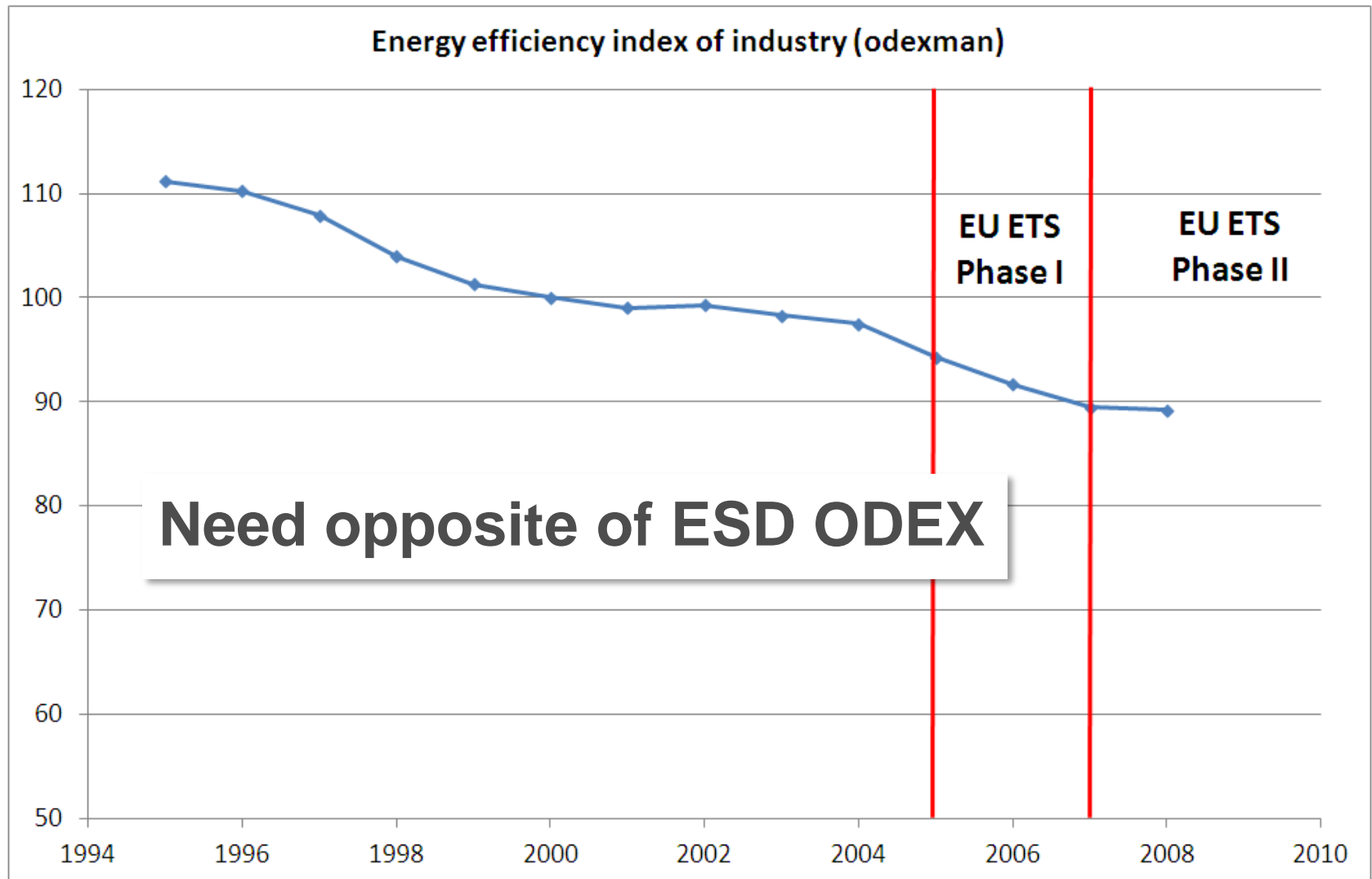
# Methodology industry sector and use of Odyssee Indicators

- **Fuel efficiency improvements in industry branches concerned by EU ETS**
  - **Methodology:** “Opposite” of ESD ODEX for industry by country. Energy efficiency index for individual concerned branches/products (steel, cement, paper, glass). Determination of counterfactual from period before 2005. Sensitivity with respect to period. CO<sub>2</sub> conversion factors from Odyssee (for whole branch; not available for ETS alone). Comparison with emissions from emission register
- **Electricity efficiency improvements in ALL industrial branches due to the integration of CO<sub>2</sub> prices in into electricity prices**
  - **Methodology:** Electricity ODEX for industry by country? Determination of counterfactual from period before 2005.
- **Enhanced fuel shift towards less CO<sub>2</sub>-intensive fuels: more natural gas and electricity; increased penetration of renewables in ETS-Industries**
  - **Methodology:** Fuel mix for industry by country. Determination of counterfactual from period before 2005.
- **Reduction in production volumes (due to the shift of production volumes outside Europe >>> Analysis of foreign trade required. Elasticities for the demand of the products**

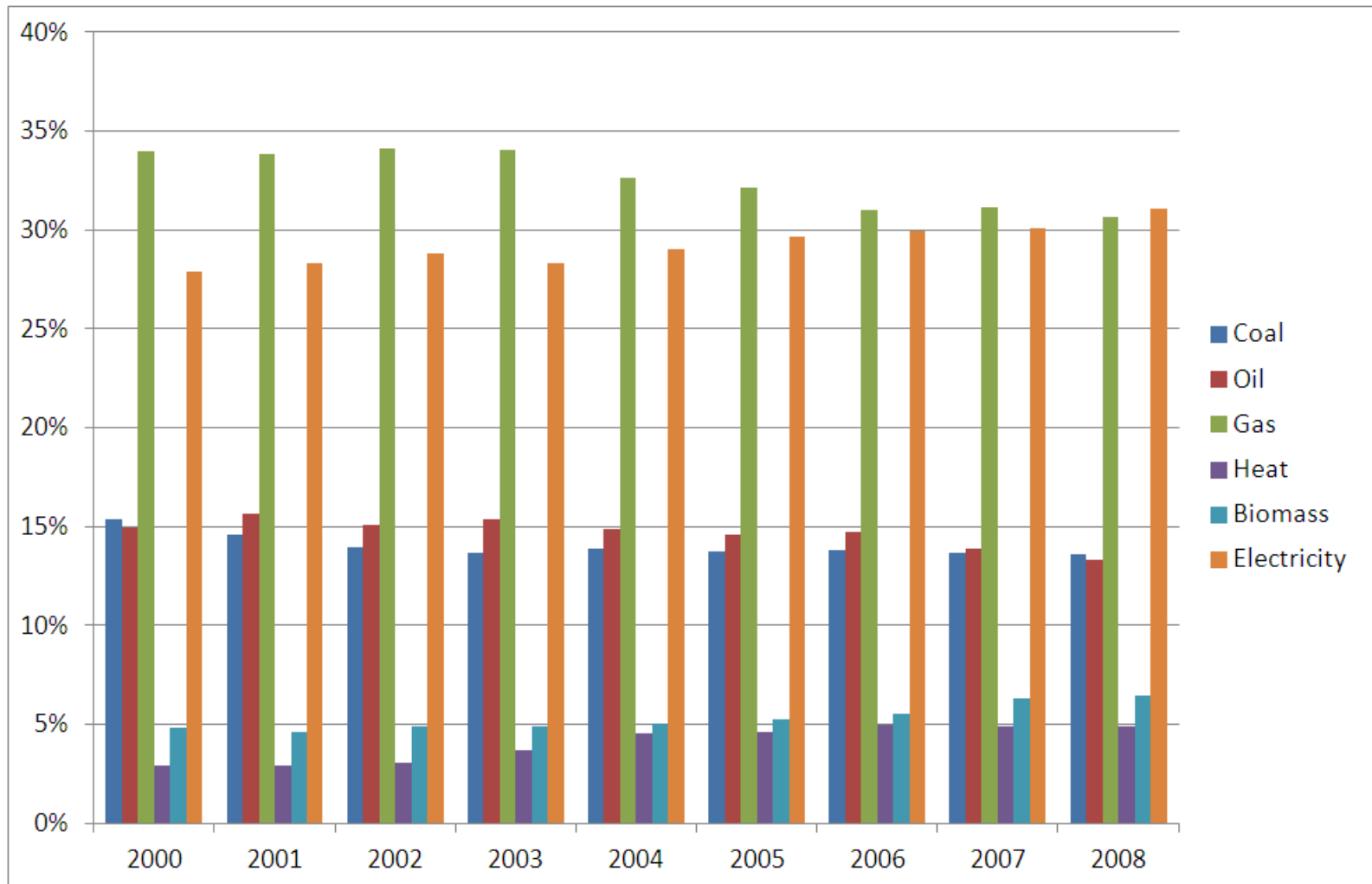
# Methodology energy sector and use of Odyssee Indicators

- Energy efficiency improvement in electricity generation by fuel (gas...)
  - **Methodology:** Transformation sector-ODEX? (Primary energy ODEX contains also final energy developments). Power plant efficiency information by country.
- Enhanced penetration of more efficient power plants: more efficient fossil power plants (in particular gas plants), enhanced penetration of renewables into electricity generation
  - **Methodology:** Transformation sector-ODEX? (Primary energy ODEX contains also final energy developments). Power plant mix information by country.
- Reduction in the demand for electricity across ALL sectors due to the integration of CO<sub>2</sub> prices in into electricity prices
  - **Methodology:** Electricity ODEX for all sectors by country. Determination of counterfactual from period before 2005.
- Change in the dispatch of power plants

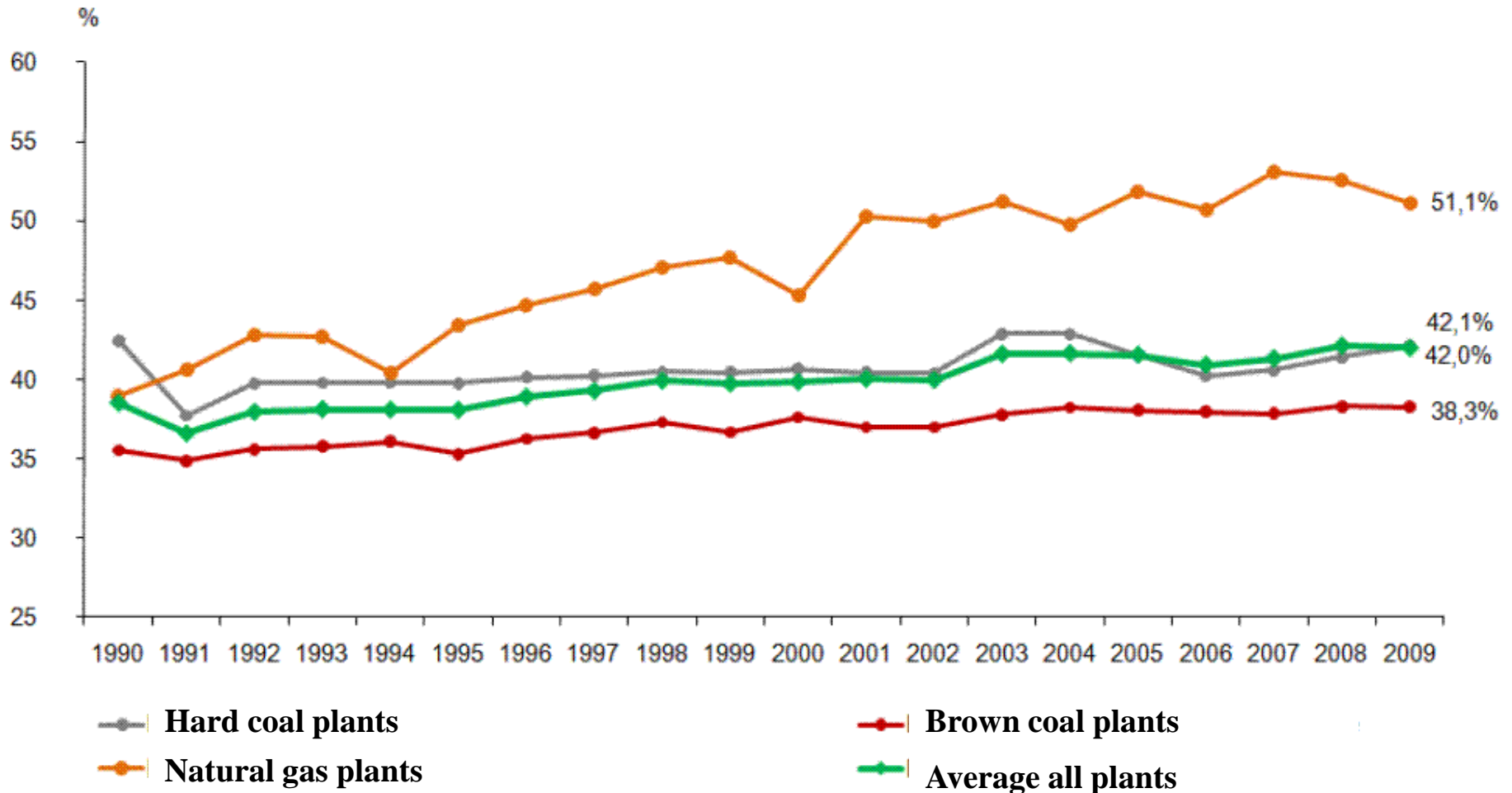
# EU27: Development of ODEX



# Fuel shares industry EU-27



# Development of (gross) power plant efficiency in Germany



Source:  
<http://www.umweltbundesamt-daten-zur-umwelt.de/umweltdaten/public/document/downloadImage.do;jsessionid=3A412CE67CB7782AE79CADE299F1B084?ident=20769>