



**EU PROGRESS IN REDUCING
GHG EMISSIONS
TOKYO
October 2009**

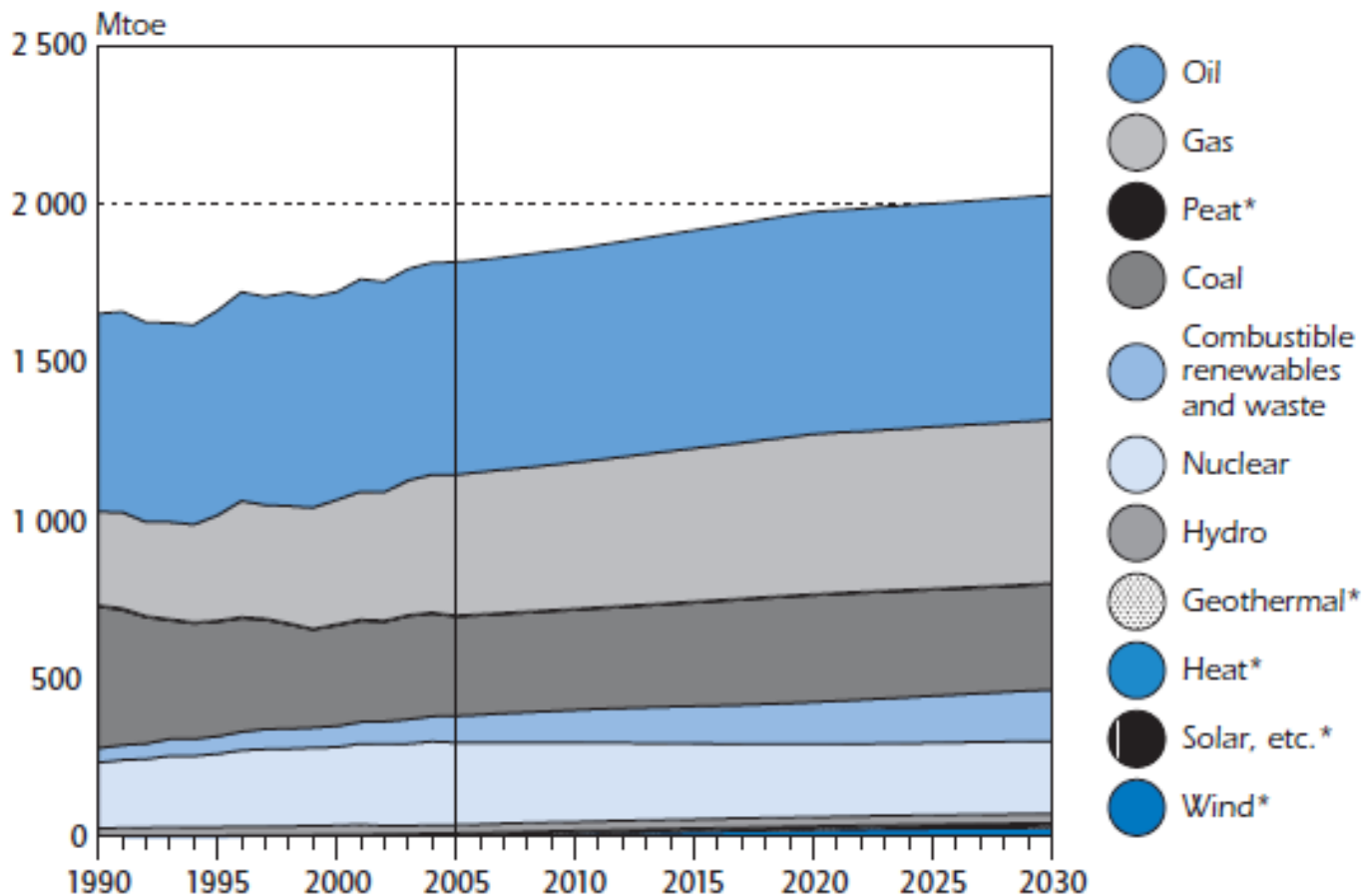
William C. RAMSAY
Senior Fellow, Director, Ifri Energy program

European Energy Policy Priorities

- **Market Reform**
- **Energy Security**
- **Energy Efficiency**
- **Renewable Energy**
- **Carbon Capture and Storage**

Total Primary Energy Supply EU 27, 1990 to 2030

Total Primary Energy Supply, 1990 to 2030

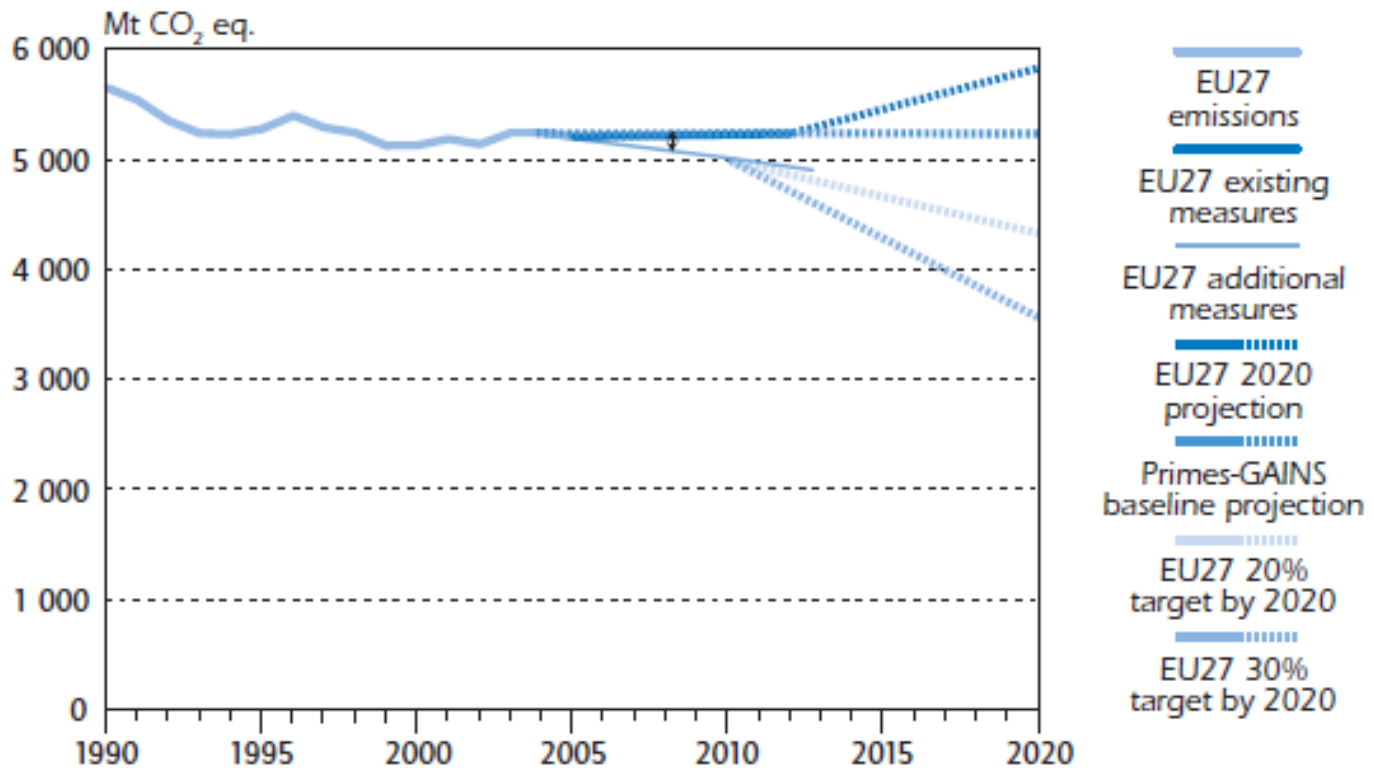


* negligible.

Sources: *Energy Balances of OECD Countries*, IEA/OECD Paris, 2007 and EU submission.

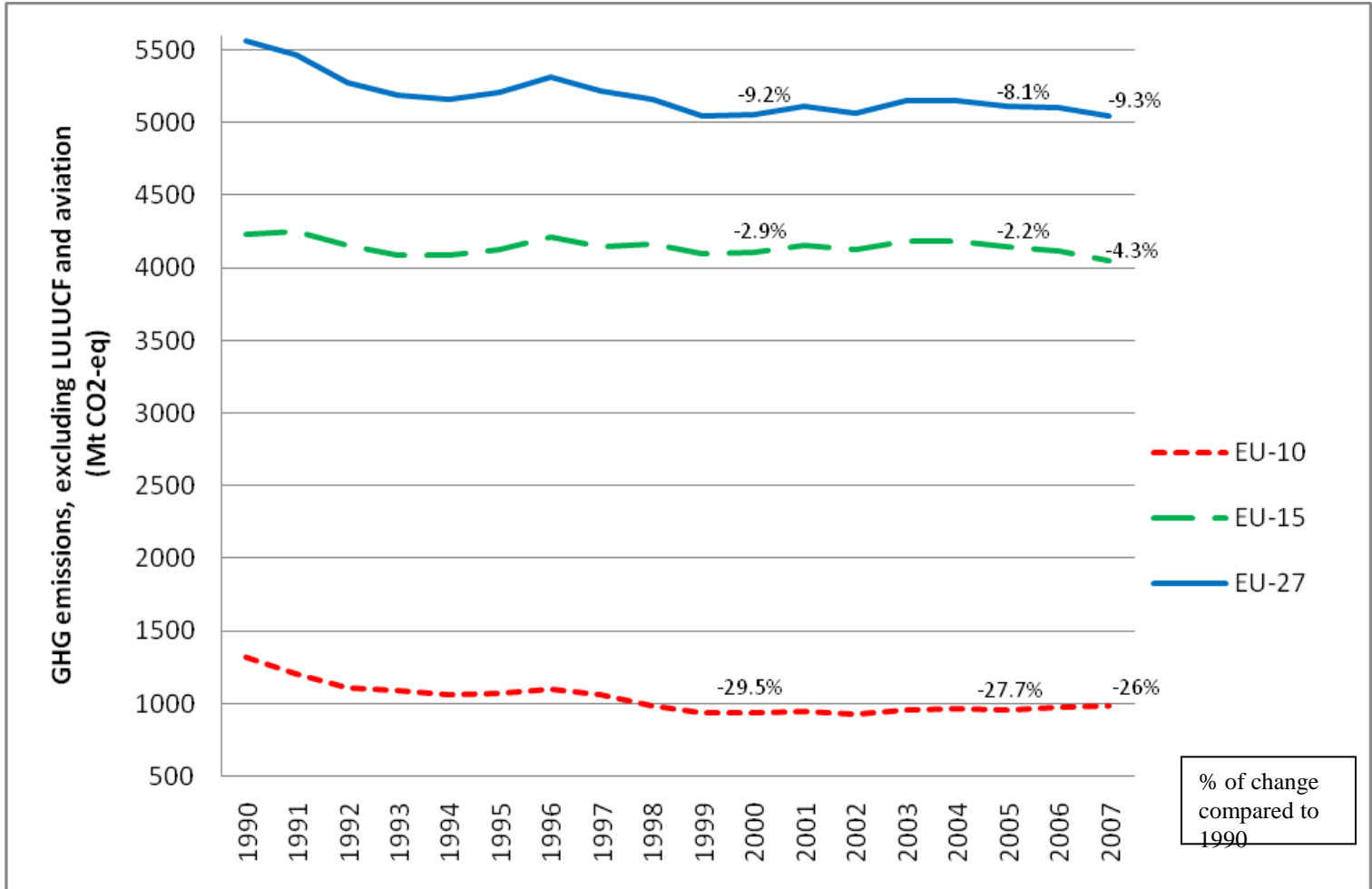
Actual and Projected EU 27 Emissions 1990 to 2020 (MtCO₂ equivalent)

Actual and Projected Emissions for EU27, 1990 to 2020
(Mt CO₂-equivalent)

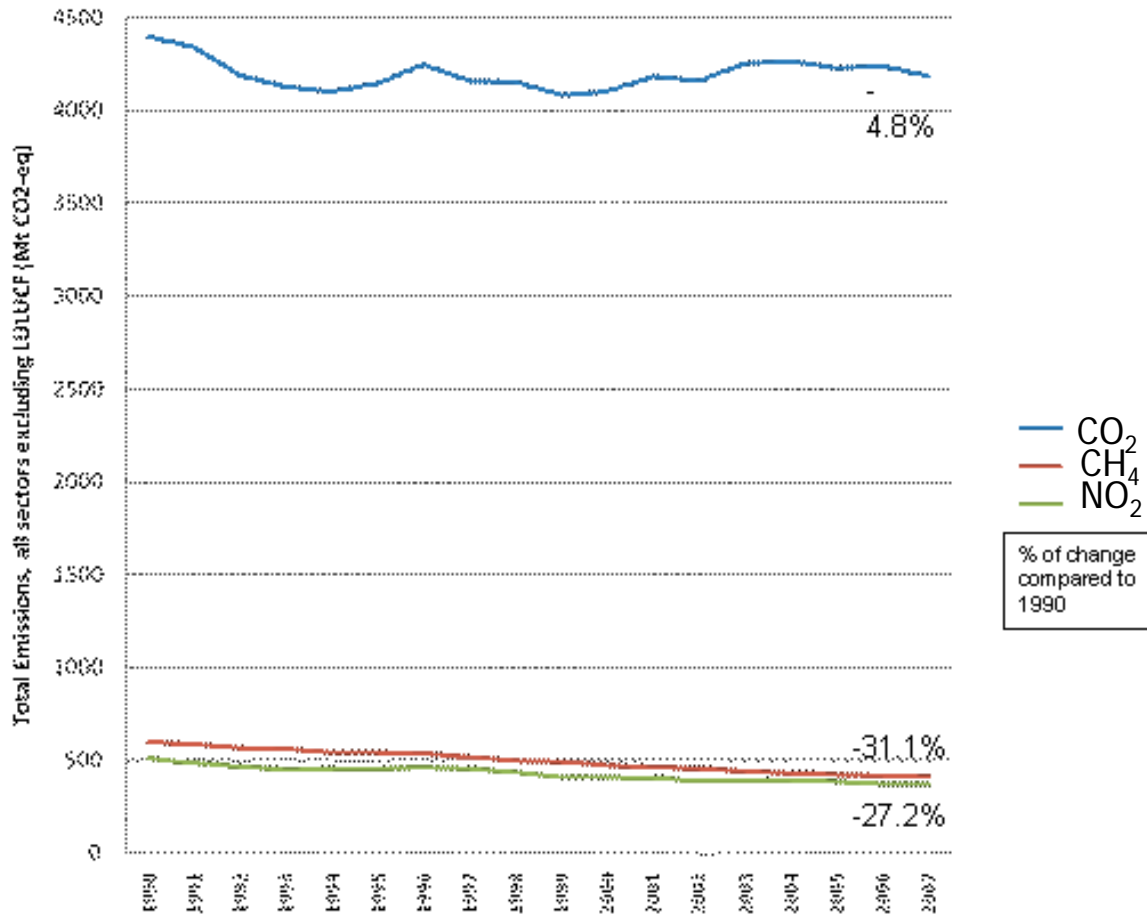


Source: EC Communication SEC(2007)1576.

GHG Emissions trends in the EU, 1990-2007



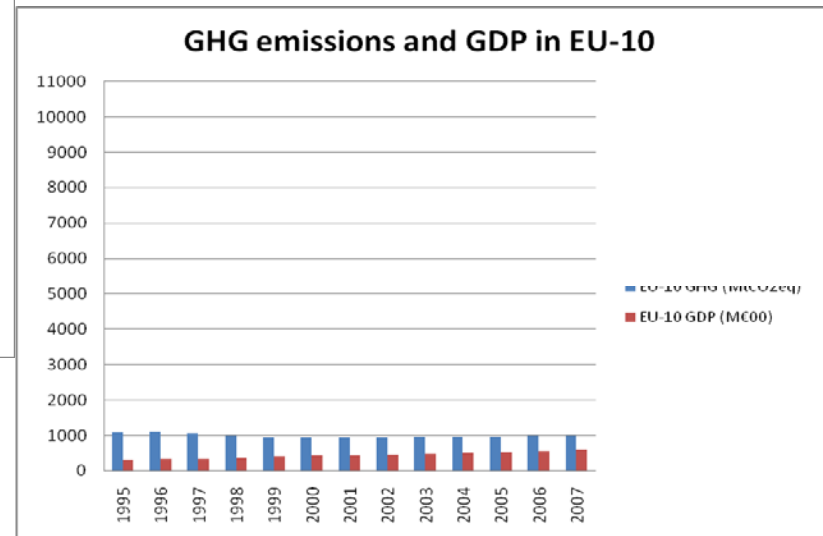
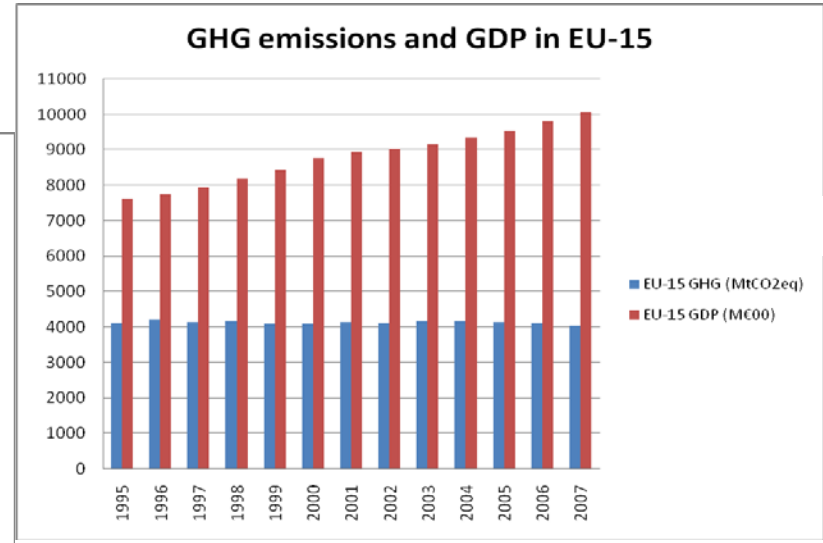
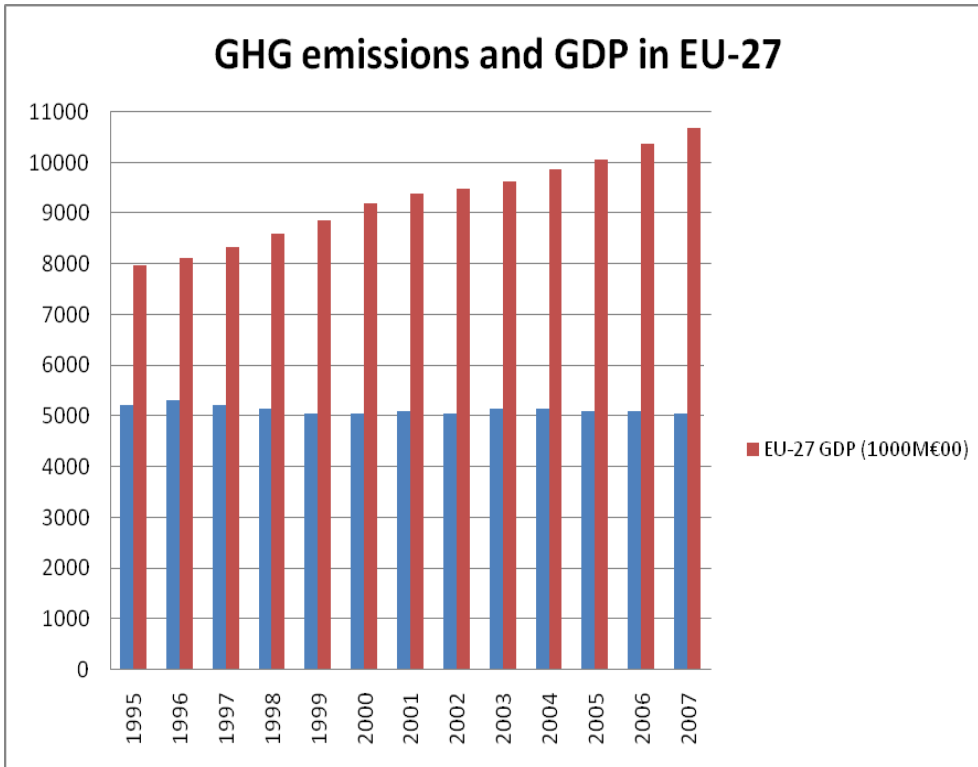
Main GHG Emissions Trends in the EU27 1990-2007 (For all sectors excluding LULUCF)



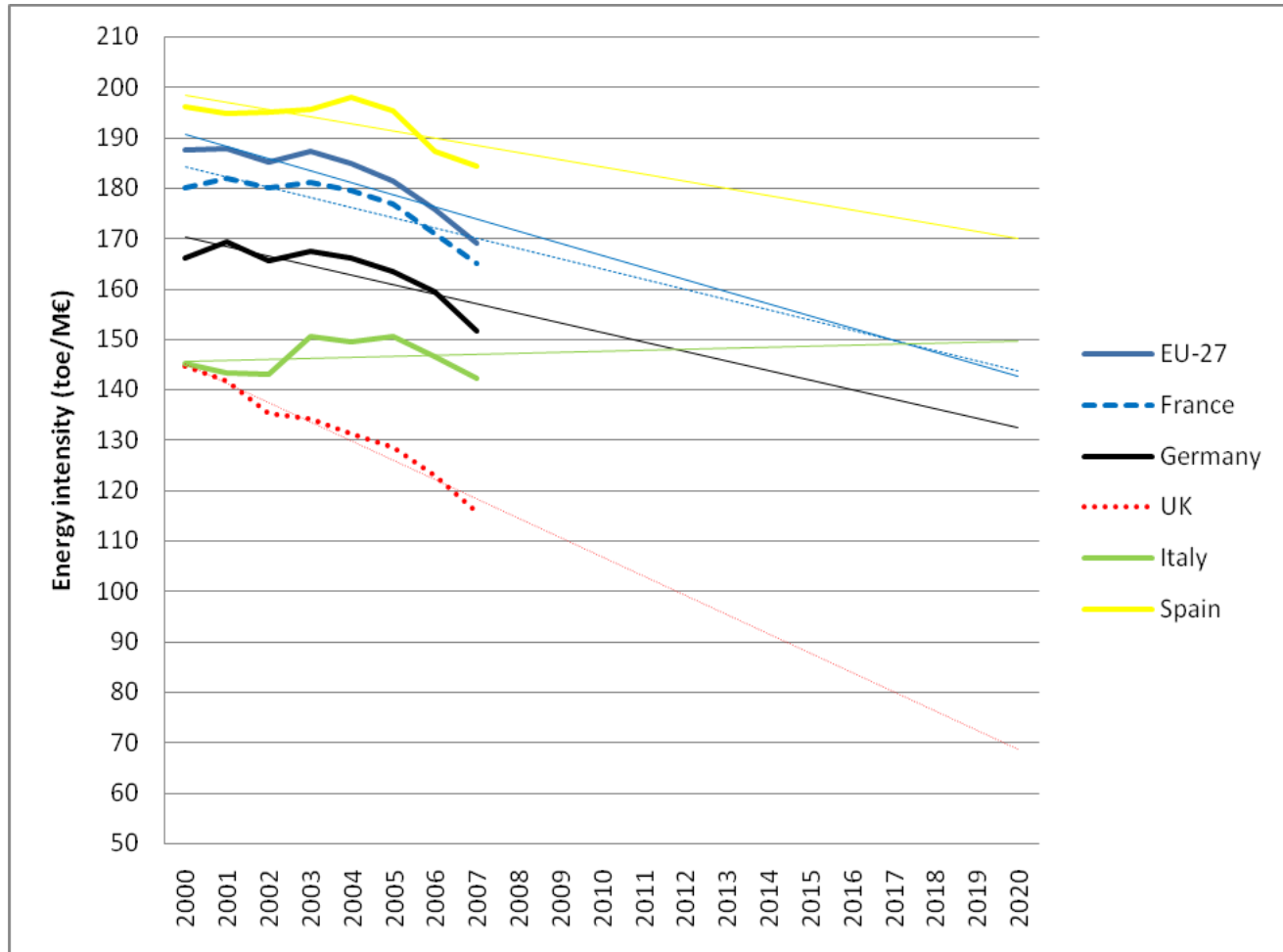
Source: data from EEA Technical Report n°4/2009

GDP/GHG emissions relationship in the EU from 1995 to 2007

- EU GHG (MtCO₂ eq)
- EU GDP (1000M€)

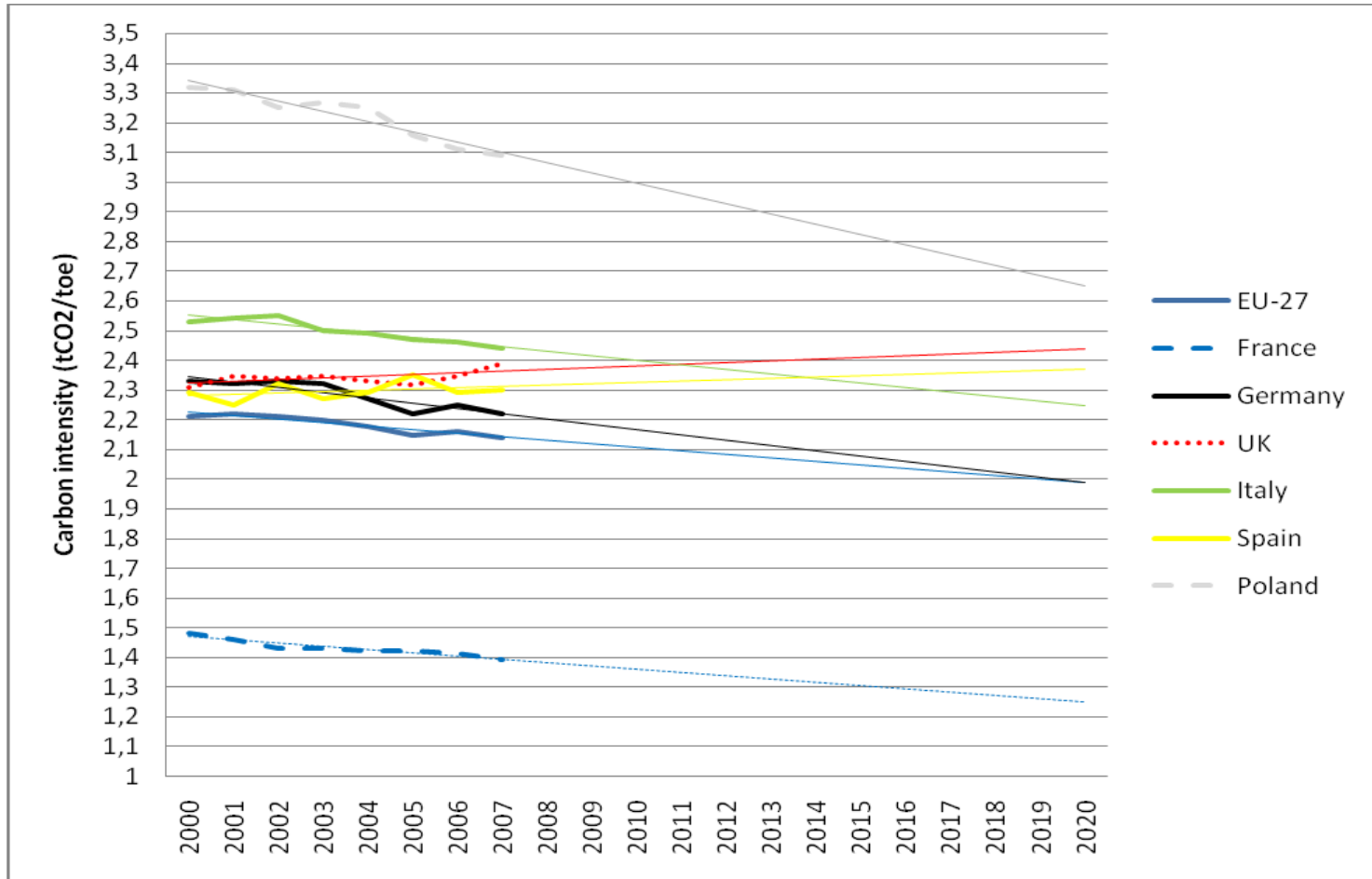


Energy Intensities for EU and Top 5 since 2000 Projections to 2020

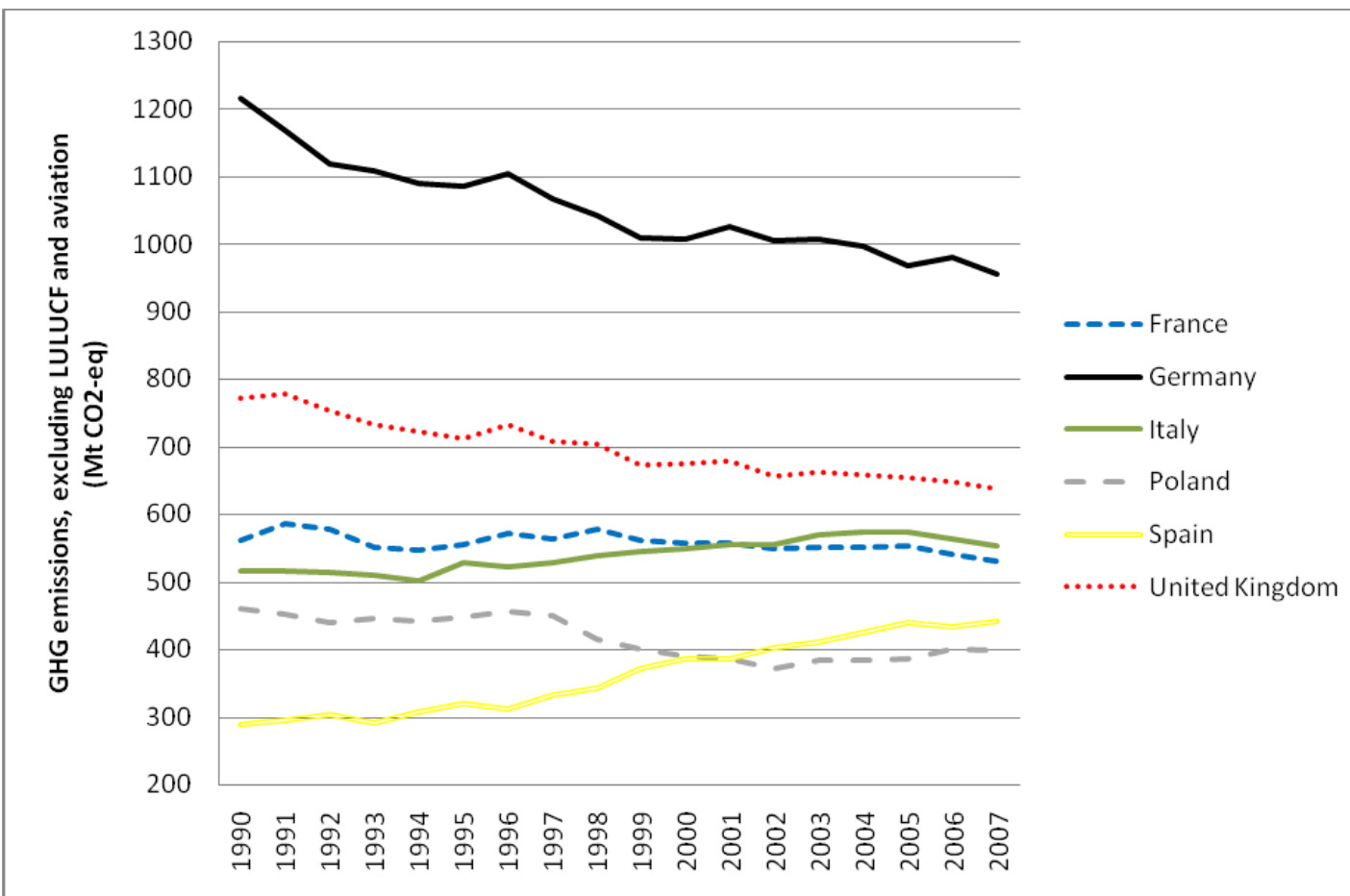


Source: data from EEA Technical Report n° 4/2009 and EUROSTAT Statistics Database; trend line projection based on Excel

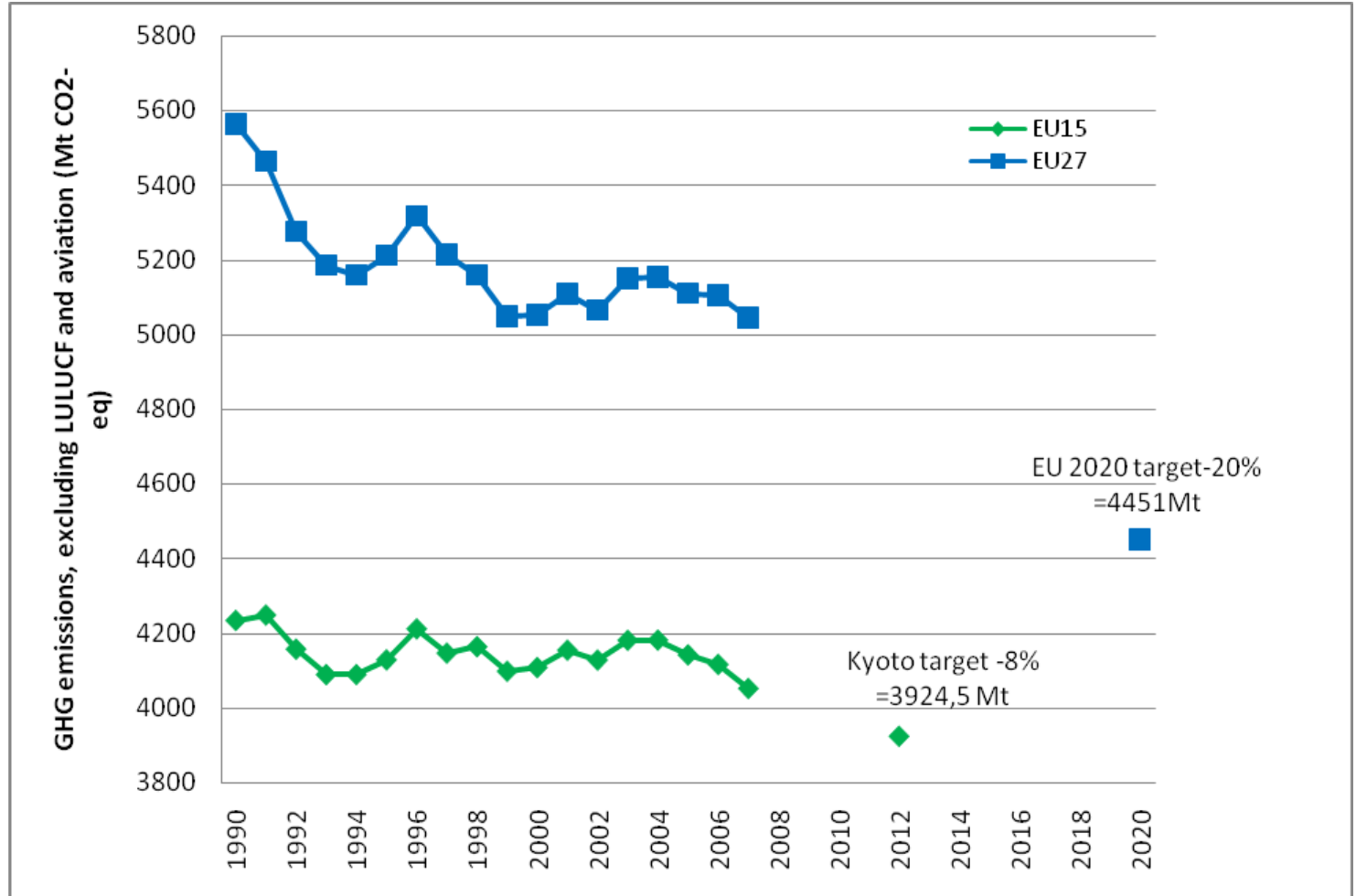
Carbon Intensities in EU and Top 6 Emitters Since 2000 and Projected to 2020



GHG Emissions Trends in 6 Largest EU Emitters 1990-2007



EU-15 and EU-27 GHG Emissions 1990-2007 Versus Political Targets



- EU 27 GHG reductions still needed from 2007
 - Feasible?

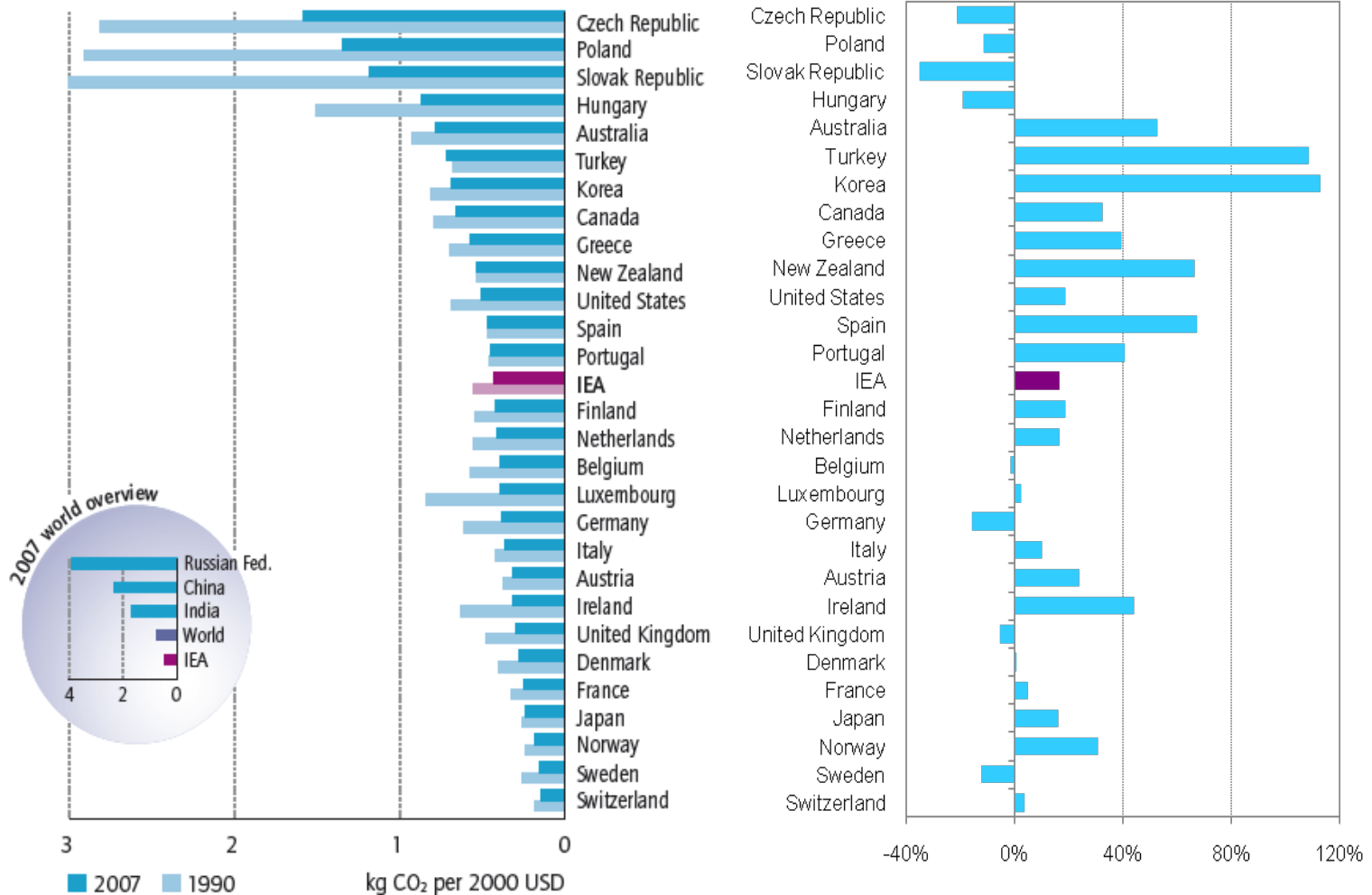
α	GHG emissions in 2007 · (Mt CO2 eq)α	Emission reduction · effort to make from · 2007 to 2020 (Mt CO2 · eq)α	GHG emission targets in · 2020 (Mt CO2 eq)α
ETS sectorsα	2165α	-445α	1720α
Non-ETS sectorsα	2880α	-149α	2731 α
Totalsα	5045α	-594α	4451 α

Decoupling CO₂ emissions and GDP

Still a 20% increase for IEA emissions as a whole

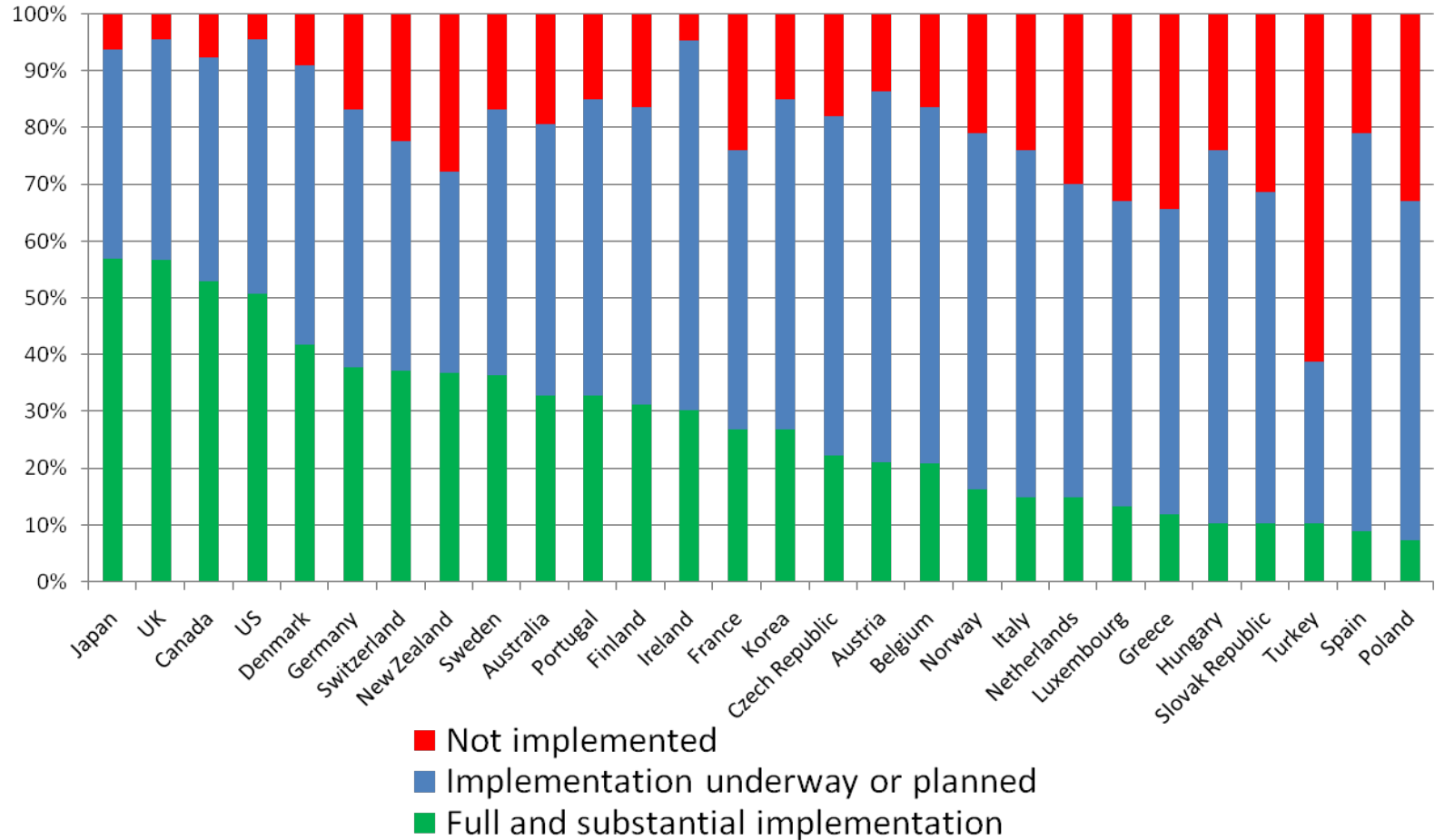
CO₂ emissions per GDP

Percentage change in CO₂ emissions between 1990 and 2007

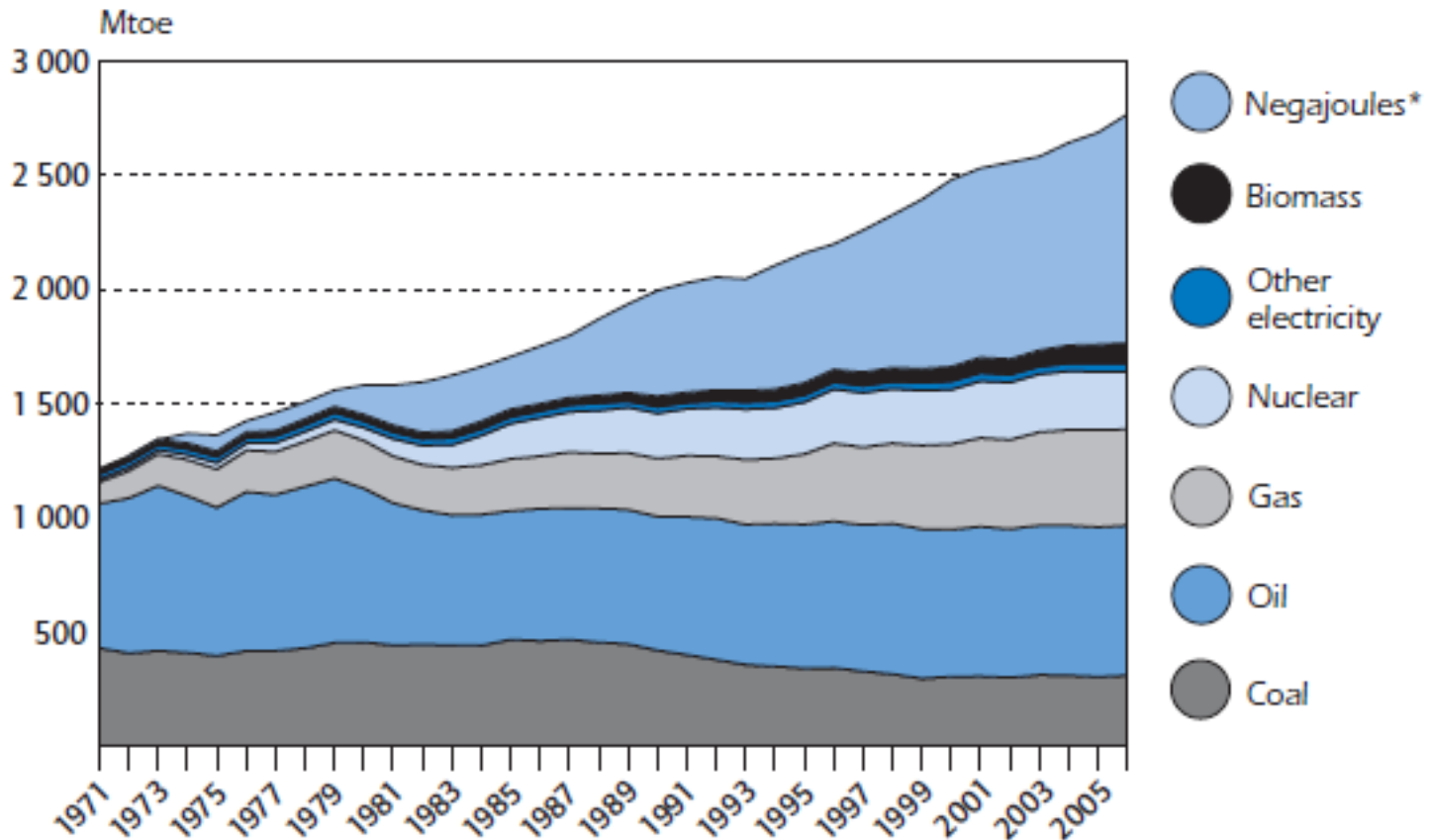


● Only 8 countries have reduced their emissions since 1990

25 Efficiency Recommendations - Modest Progress



« NEGA-JOULES » (Avoided Energy) Cheapest, Most Secure Energy EU25, 1971 to 2005

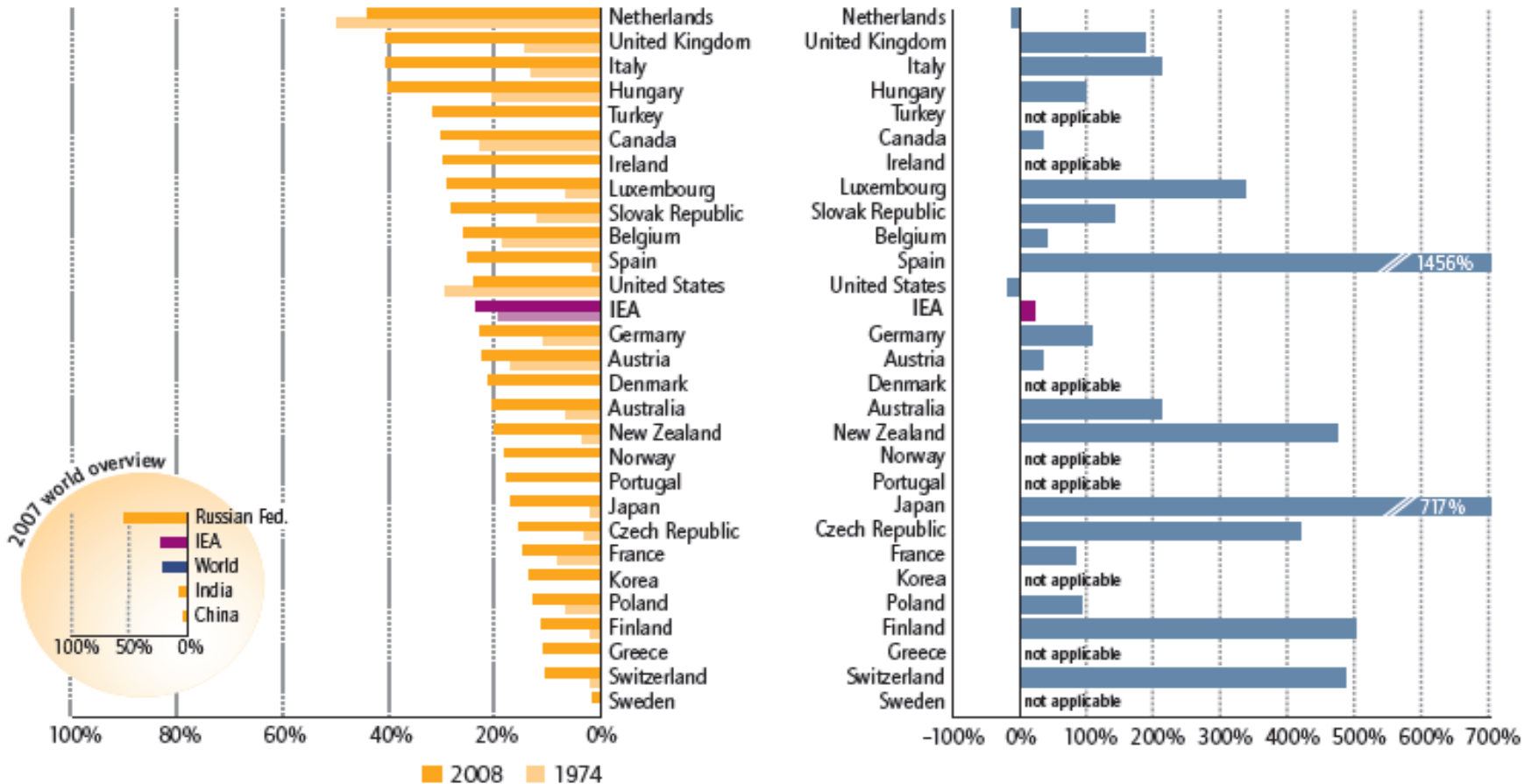


**negajoules*: energy savings calculated on the basis of 1971 energy intensity.
Sources: COM(2006)545 and Enerdata 2006.

Natural Gas Now 2nd Largest Fuel in IEA Mix

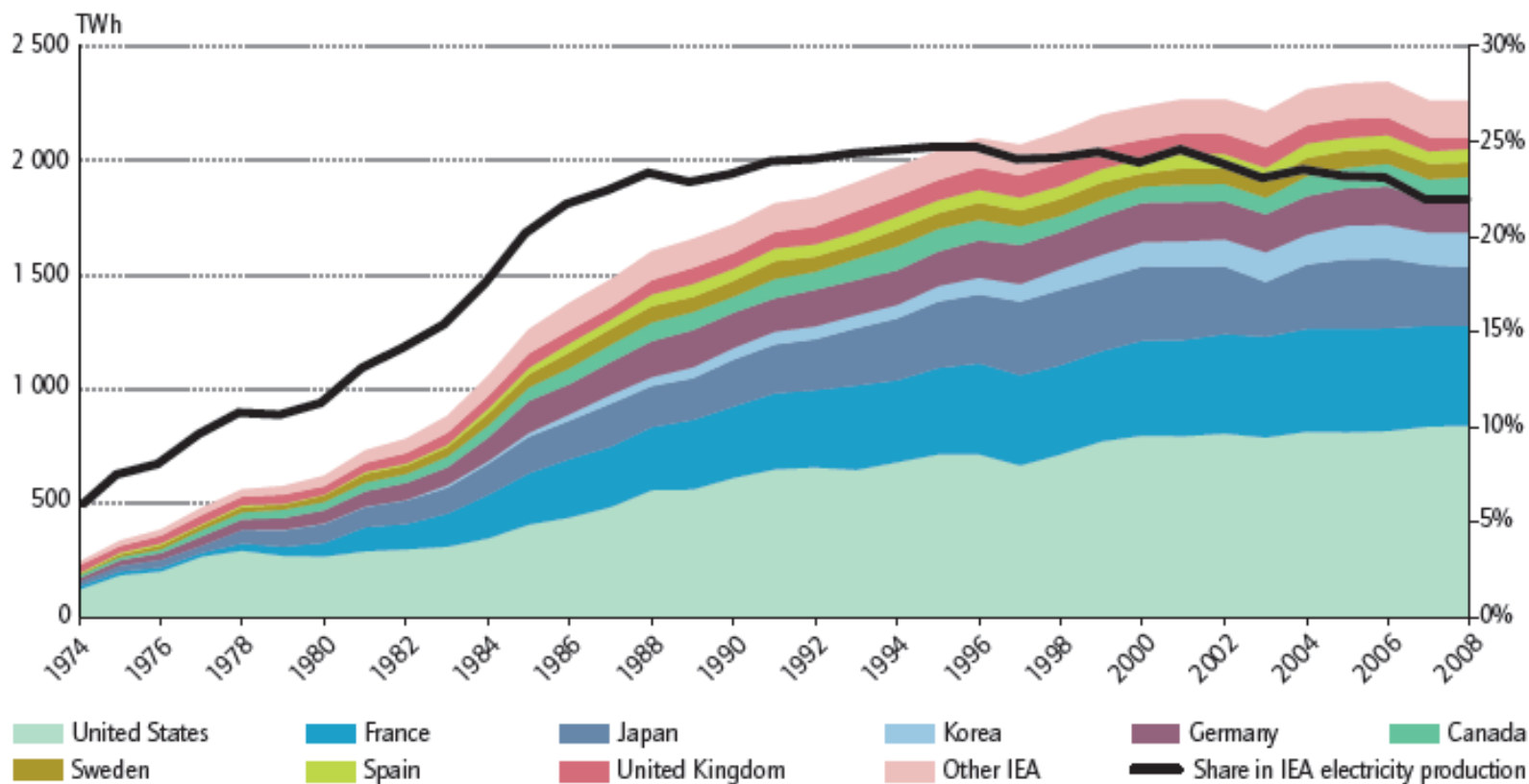
Share of natural gas in TPES*

Percentage change of share of natural gas in TPES* between 1974 and 2008



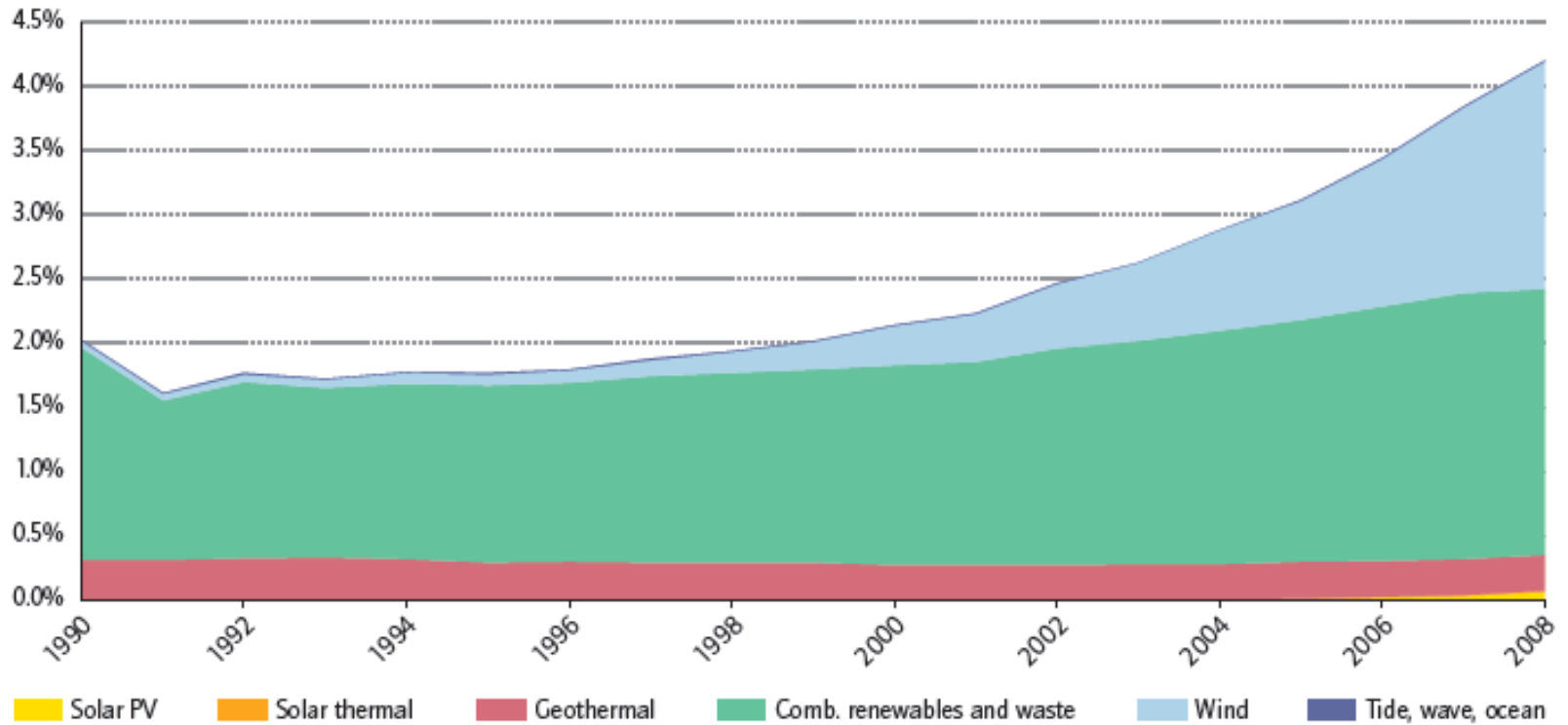
- The overall increase in IEA consumption (excluding the US) would be much higher - 23%
- Electricity generation is now the largest natural gas consuming sector at 34% up from 18%

IEA Nuclear Electricity Production by Country



* TPES excludes electricity trade.

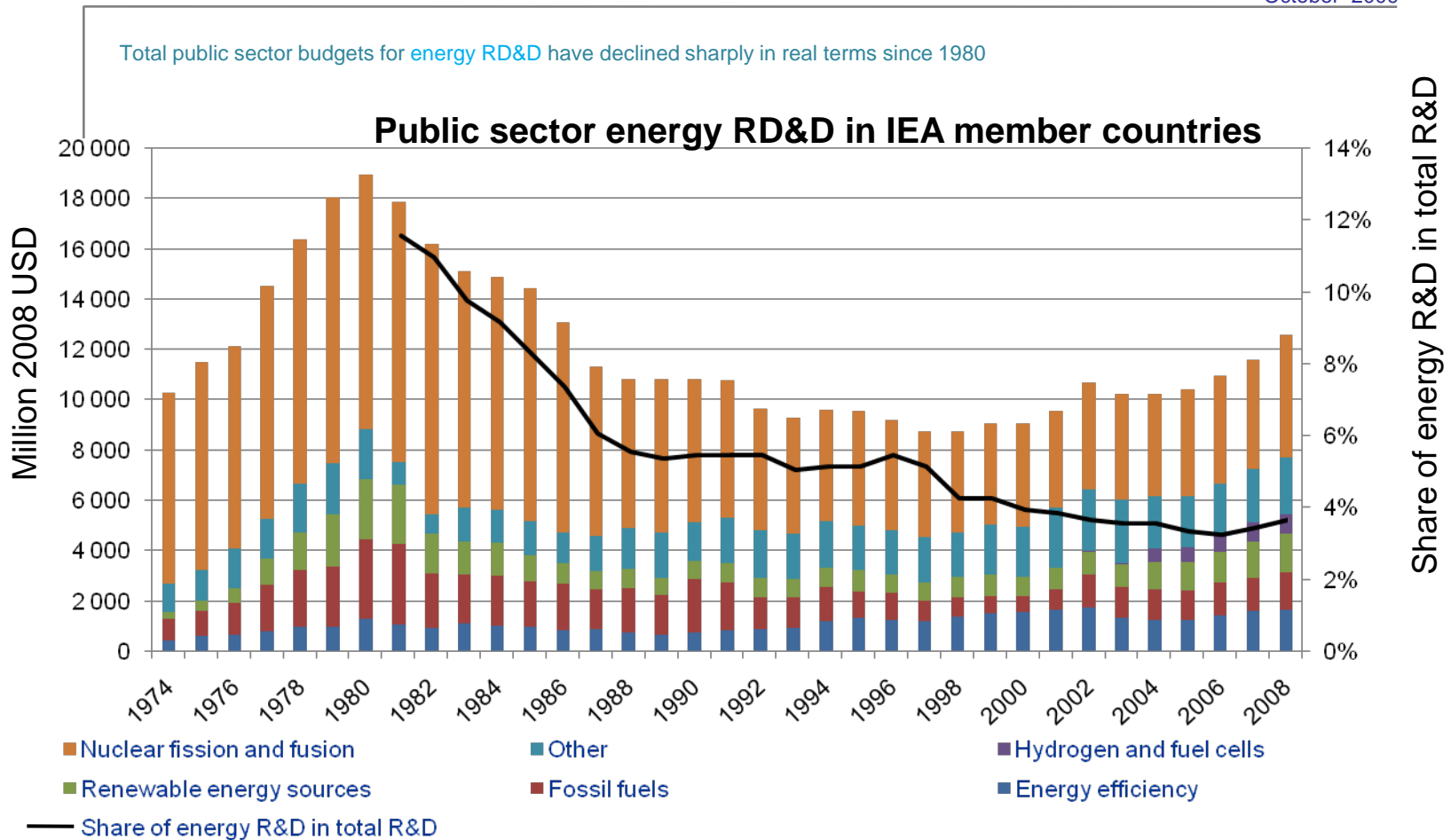
Share of Non-Hydro Renewables in IEA Electricity 1990 to 2008



* Installed capacities come from the annual questionnaires received by the IEA Secretariat from its member countries. However, other sources show large variations in the installed capacity for some countries.

IEA Power Plant Efficiency in 1974 and 2007



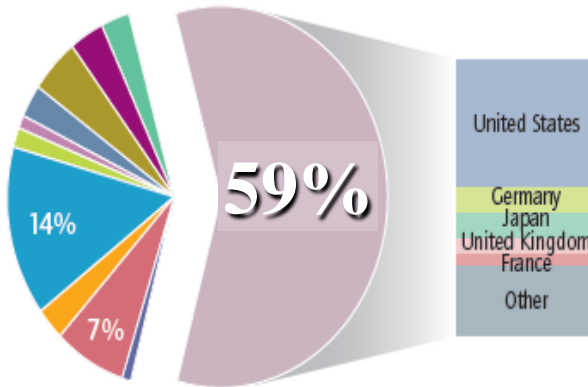


- The share of energy R&D in total research and development has steadily decreased from 12% to 4% since 1981
- The budget has decreased in some areas (fission and fusion) and has increased in other areas such as efficiency and renewables
- On a positive note, IEA member countries have successfully launched numerous Implementing Agreements (currently 42) to accelerate RD&D of energy technologies

More Energy is Now Consumed Outside IEA

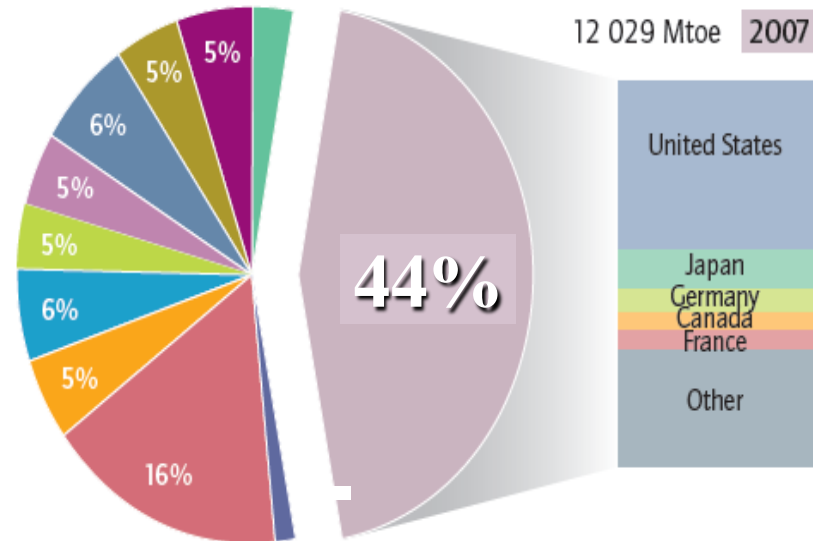
Energy consumption

1974 6 150 Mtoe



Energy consumption

12 029 Mtoe 2007



- IEA
- OECD non-IEA
- China
- India
- Russian Federation*
- Non-OECD Europe + FSU*
- Middle East
- Asia**
- Latin America**
- Africa
- International marine and aviation bunkers



Thank you
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New Renewables Installed Capacity

