The role of energy data in understanding climate change challenges

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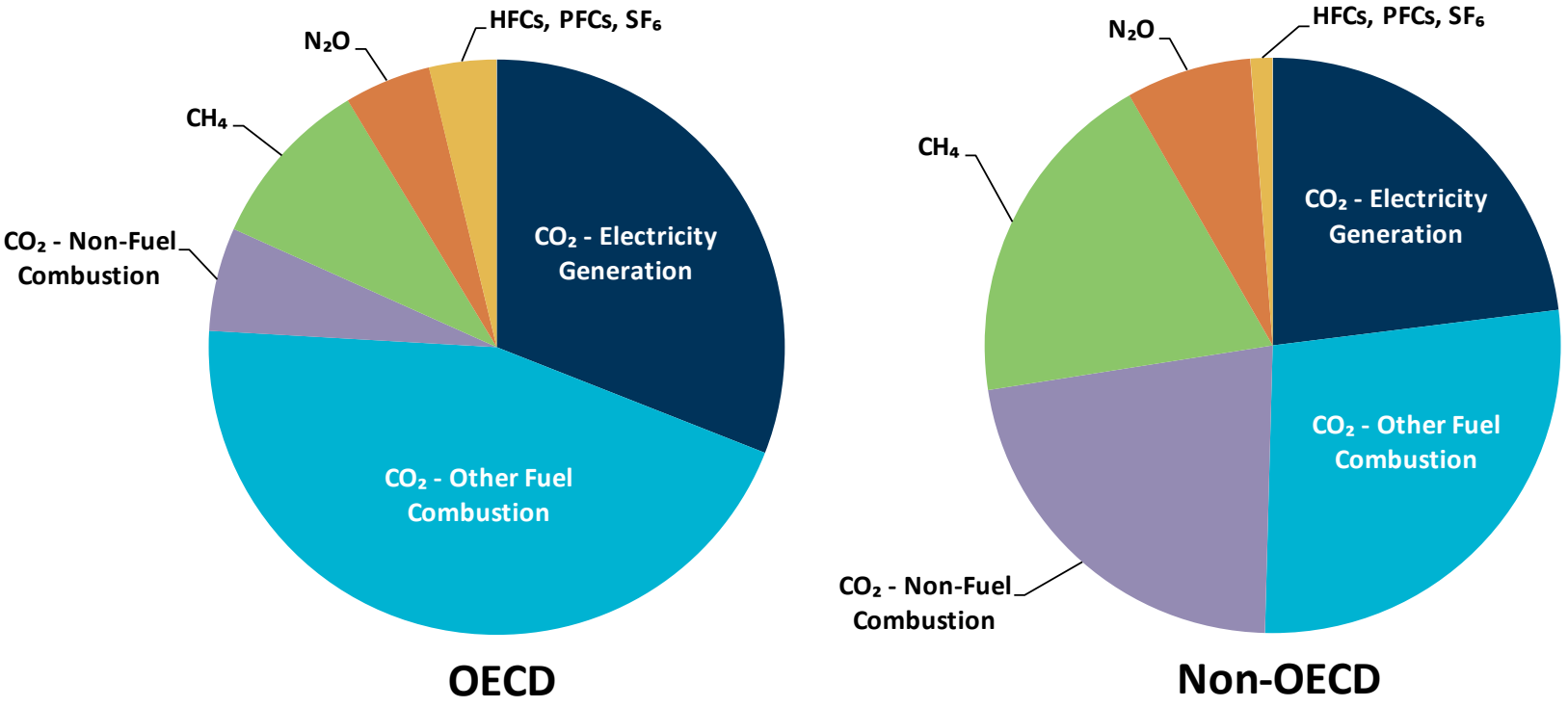
Energy is at the core of climate change

International Energy Agency
Secure Sustainable Together

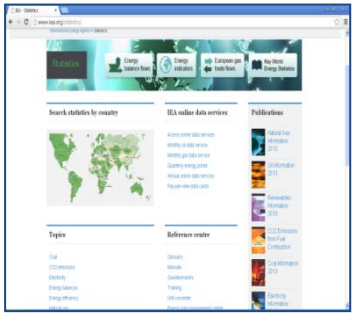
GHG emissions by source

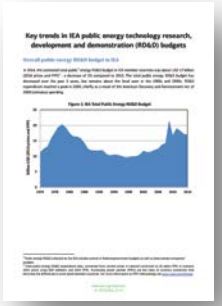


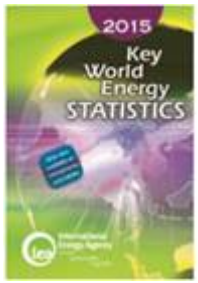
Source: Data for 2010. IEA estimates for CO_2 emissions from fuel combustion data, EDGAR 4.3/4.2 FT2010 for all other sources.

Energy statistics is at the core of the IEA

- **Comprehensive**
  - Energy data for more than 140 countries
  - All fuels
  - Supply and demand
  - Energy efficiency, Prices, RD&D

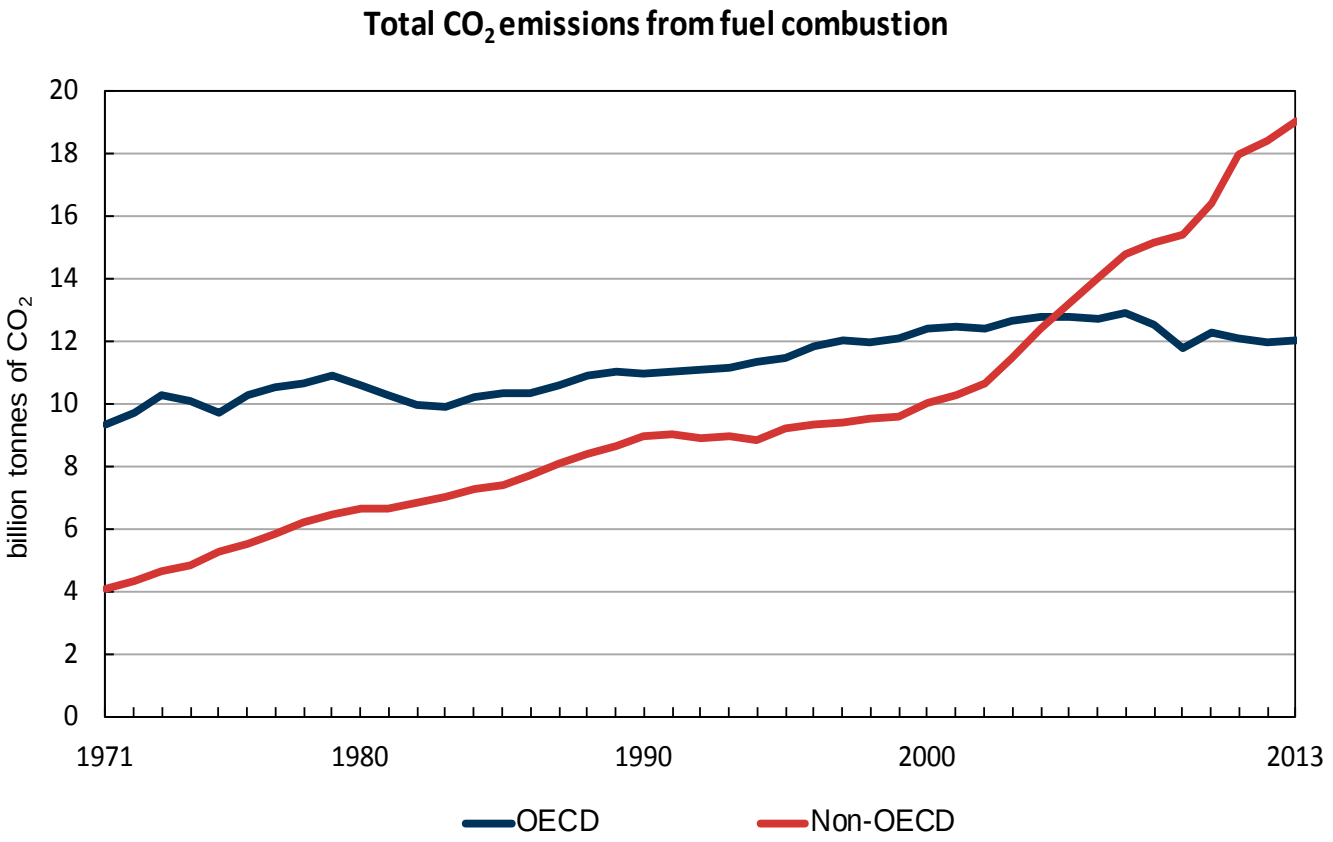






10 000 hard copies and over 200 000 downloads a year for Key World Energy Statistics, also available as an App

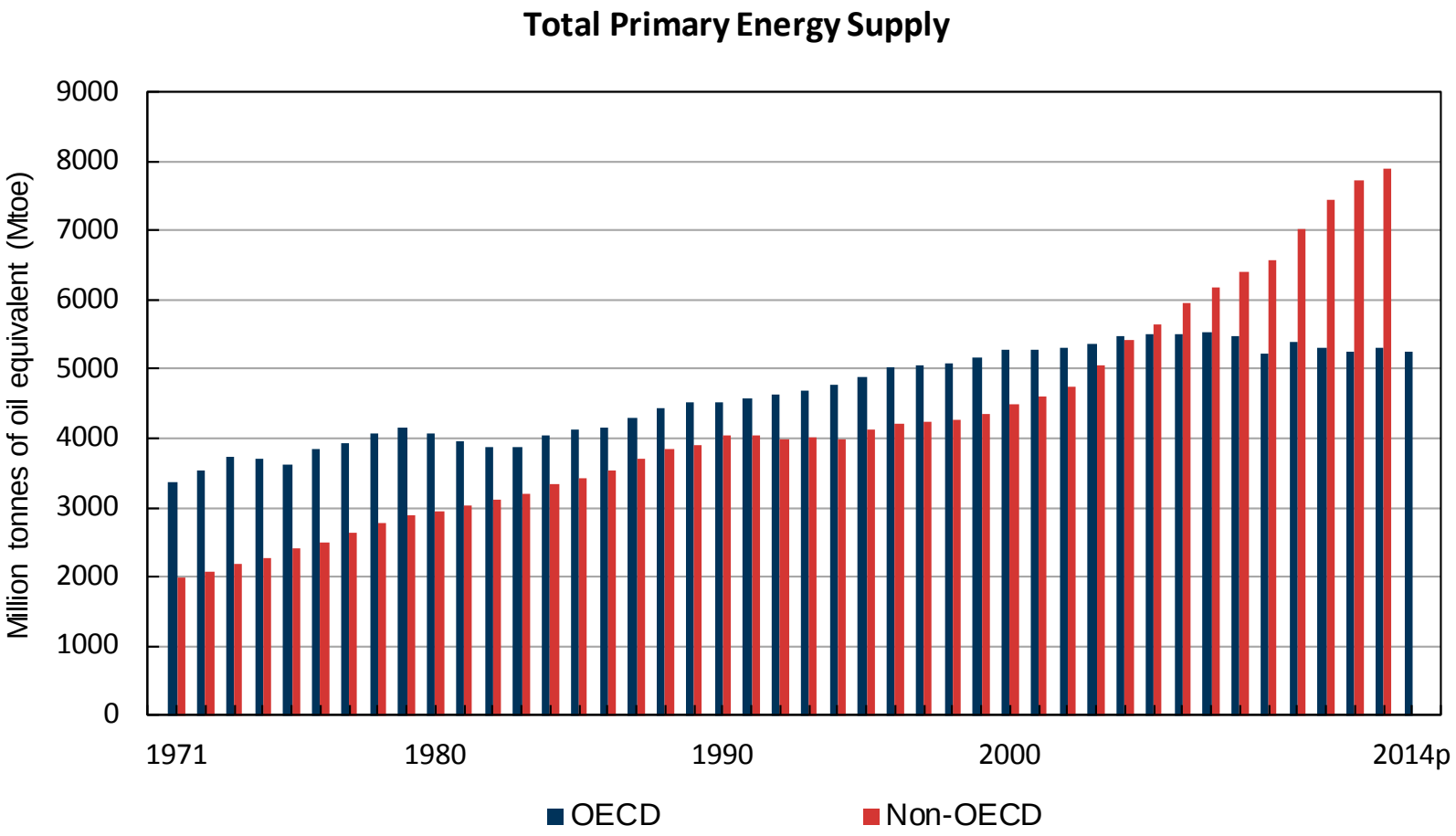
Global CO_2 emissions



Source: IEA CO_2 Emissions from Fuel Combustion, OECD/IEA, Paris, 2015.

Energy data: essential to understand climate change and to meet the challenge it creates

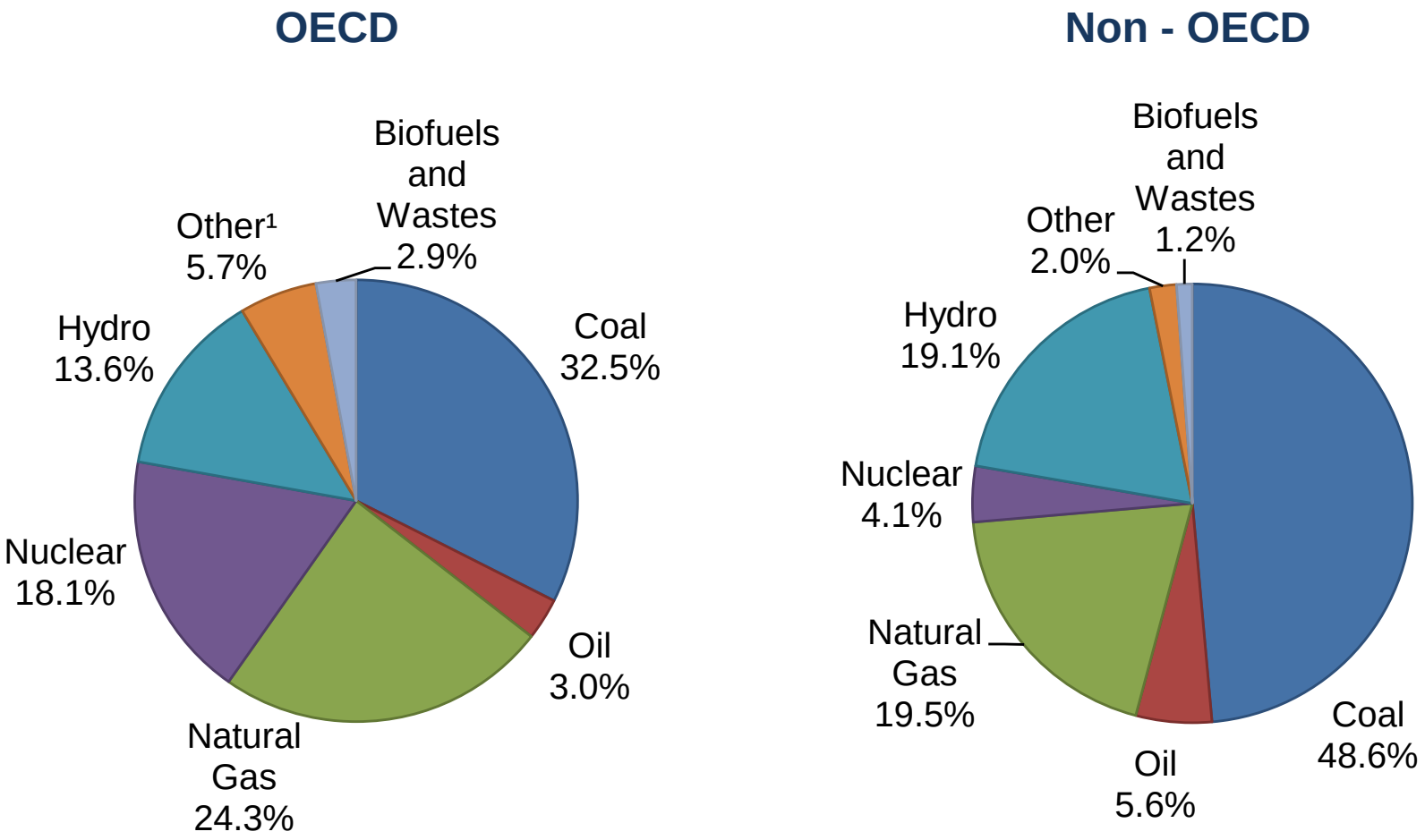
Emissions driven by energy use



Source: IEA World Energy Balances, OECD/IEA, Paris, 2015.

The importance of electricity generation

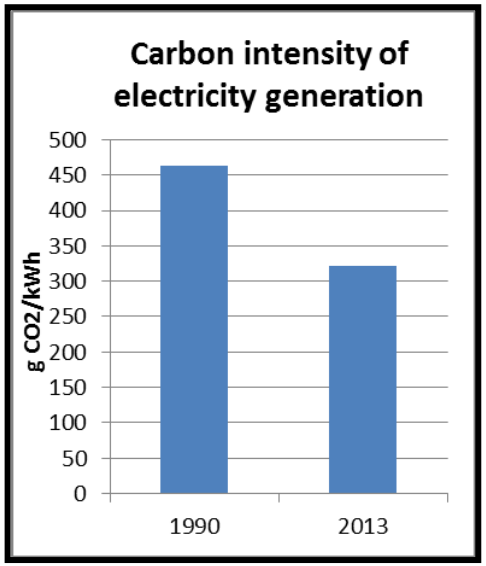
Electricity production by fuel (2013)



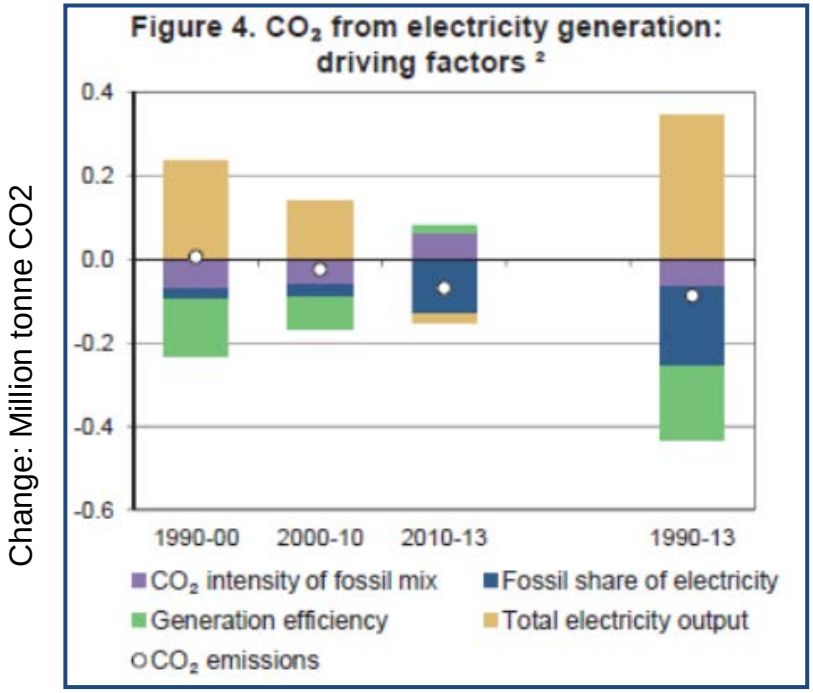
Source: IEA World Energy Balances, OECD/IEA, Paris, 2015.

1. Other includes geothermal, tide, wave, ocean, chemical heat and other non-specified (*e.g.* fuel cells) sources of electricity production.

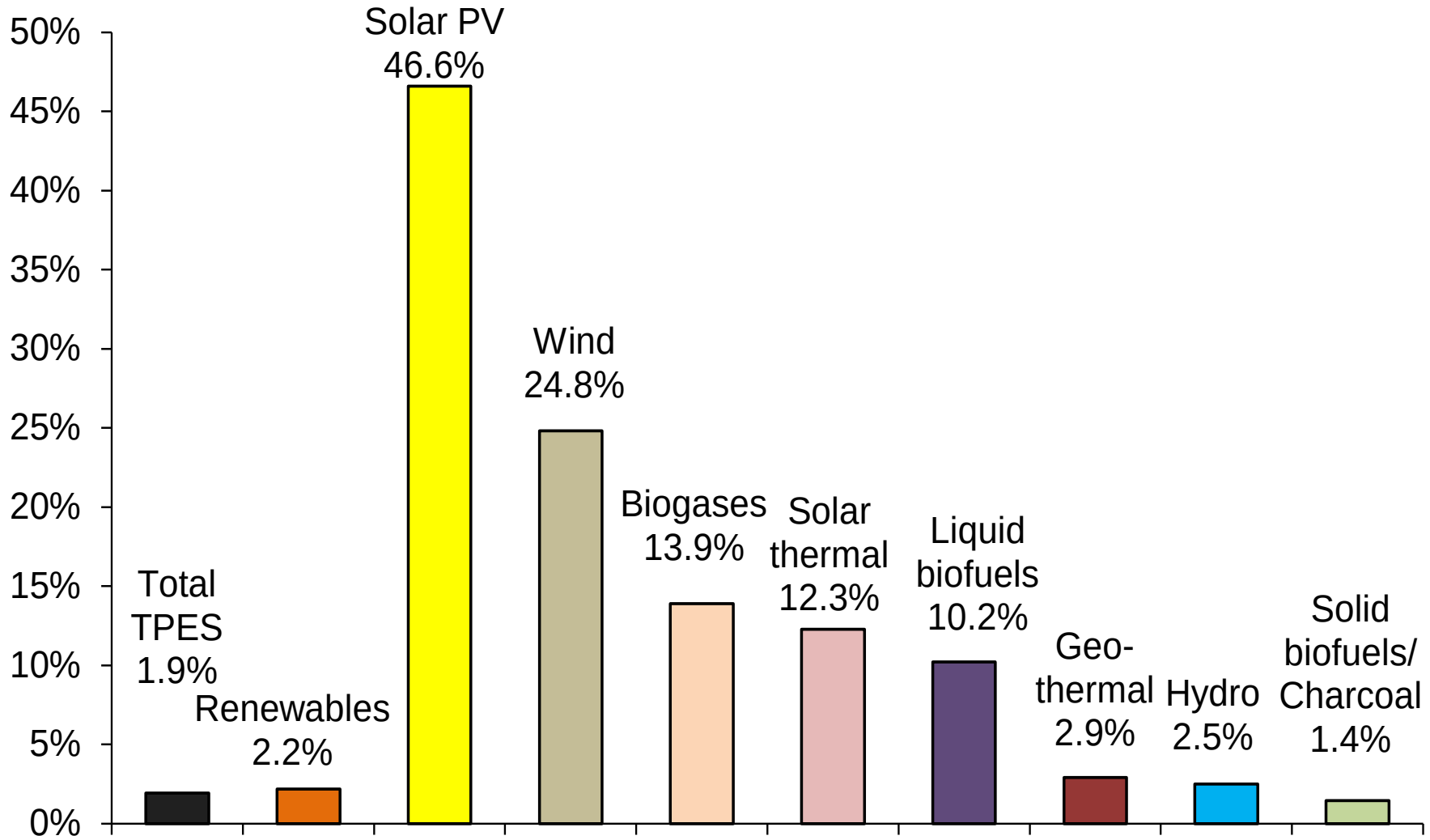
Monitoring electricity decarbonisation - OECD Europe



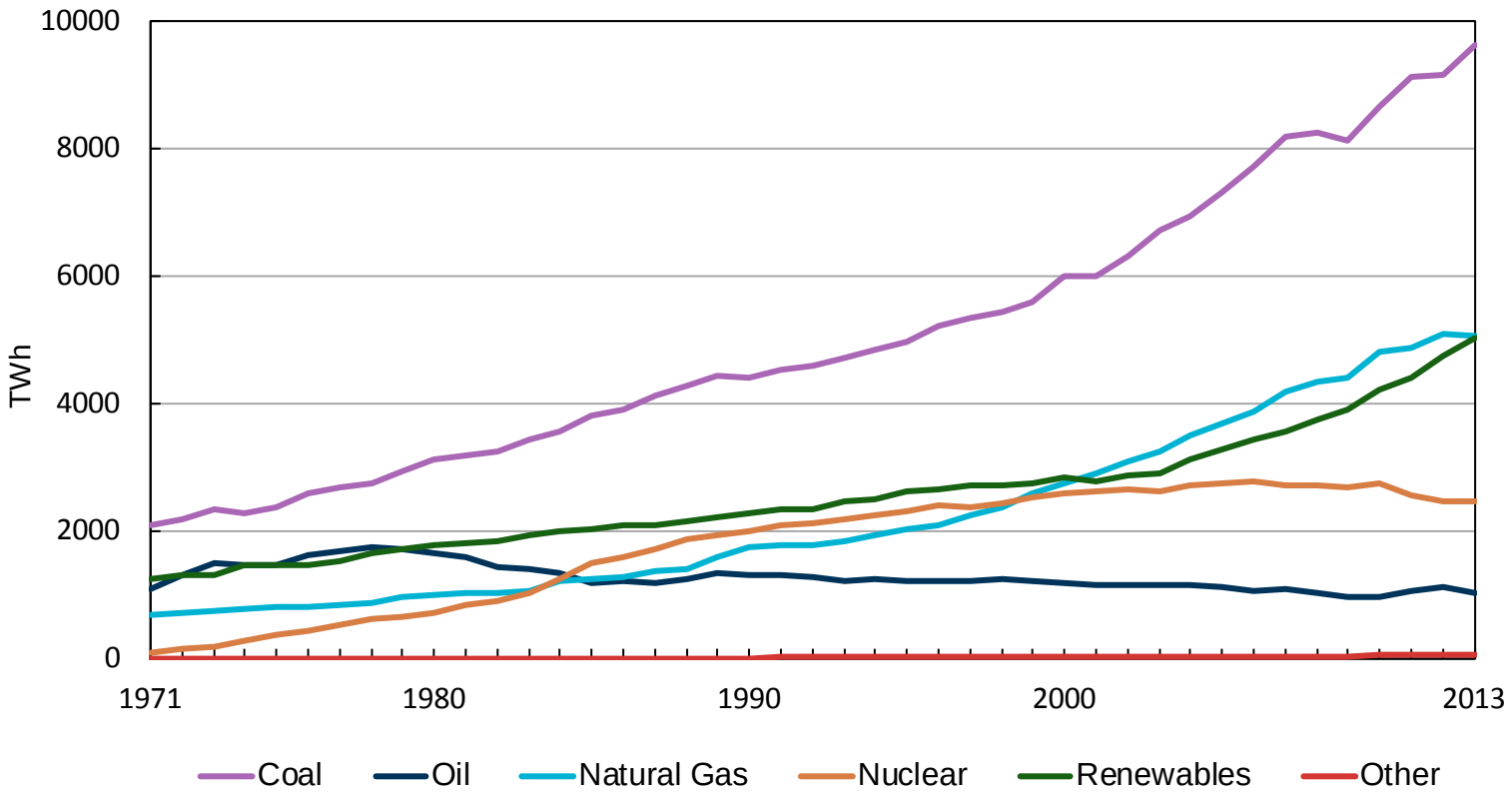
Source: IEA CO_2 emissions from fuel combustion, 2015



Annual growth rates of world renewables supply (1990-2013)



World electricity production by source (1971-2013)

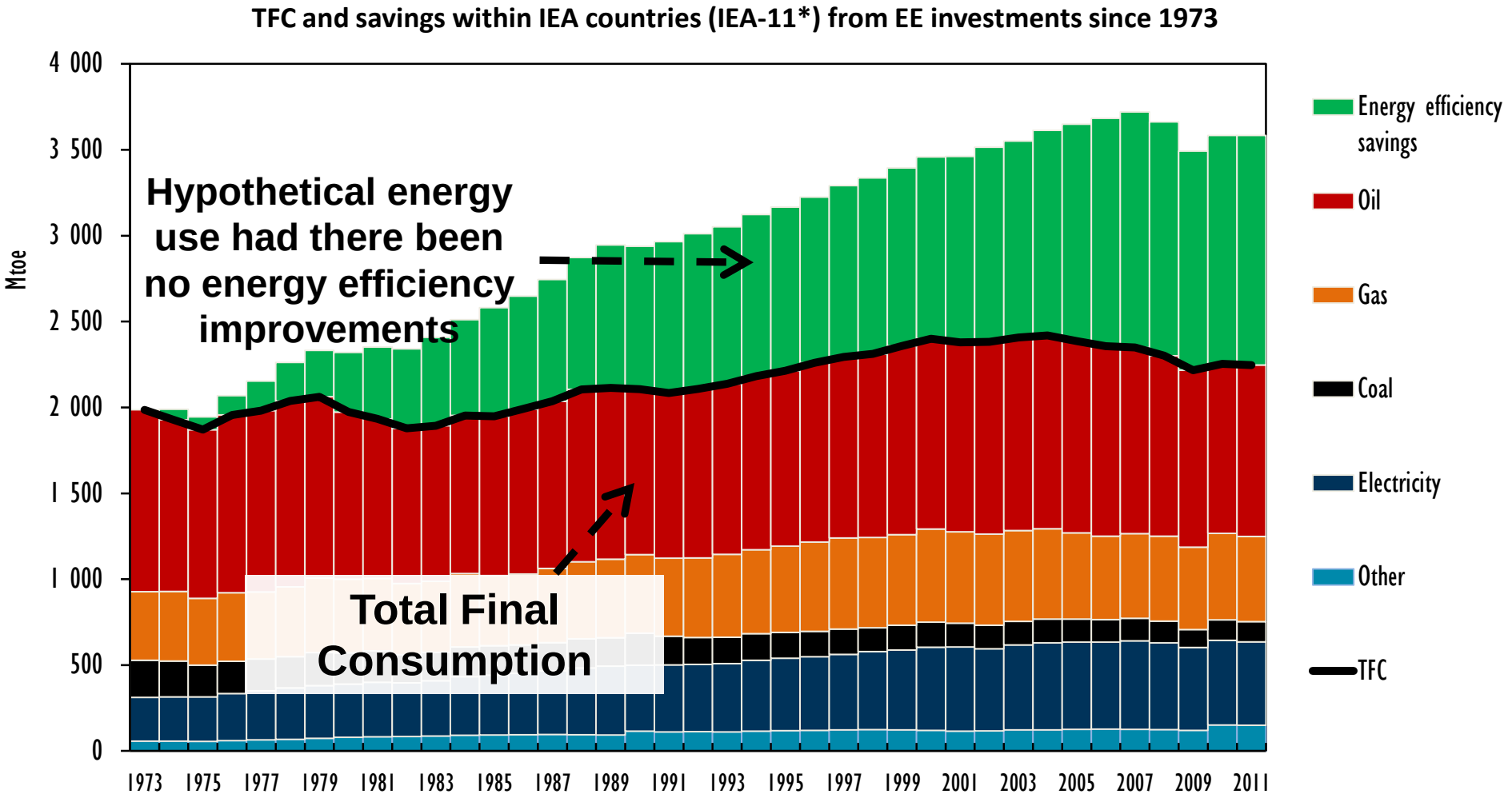


Source: IEA World Energy Balances, OECD/IEA, Paris, 2015.

Lessons from the supply side

- Regions and countries vary, need detailed understanding
- Recent development in “new” renewables has just returned renewables to long-term position as second fuel for electricity generation
- Lower carbon electricity generation alone will be insufficient
- Need to use energy more efficiently
- Need a better understanding of energy use data

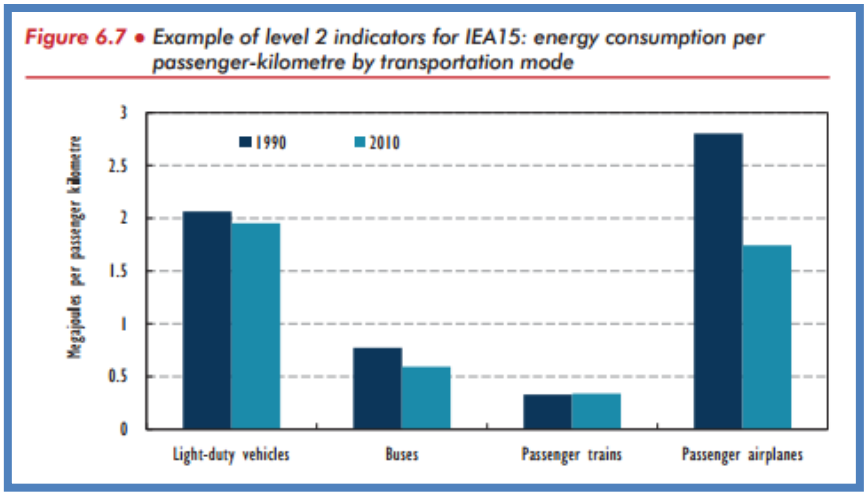
Energy efficiency: the 'first fuel'

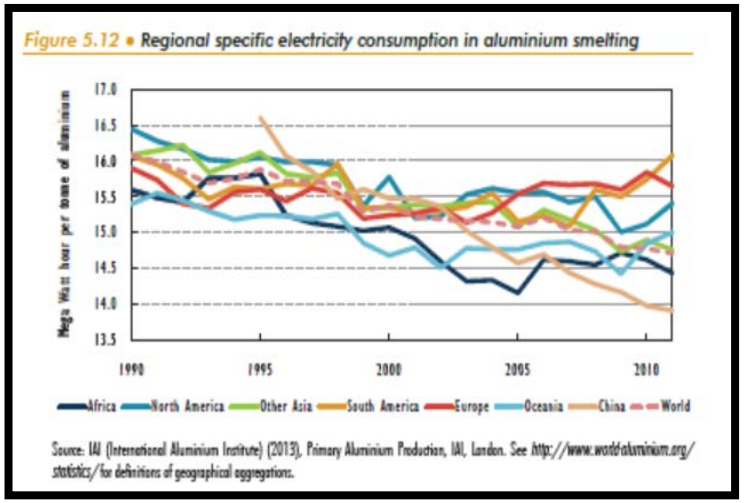


Source: IEA Energy Efficiency Market Report, 2014.

*IEA-11: Australia, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Sweden, United Kingdom, United States

End-use level data and indicators needed to monitor efficiency progress

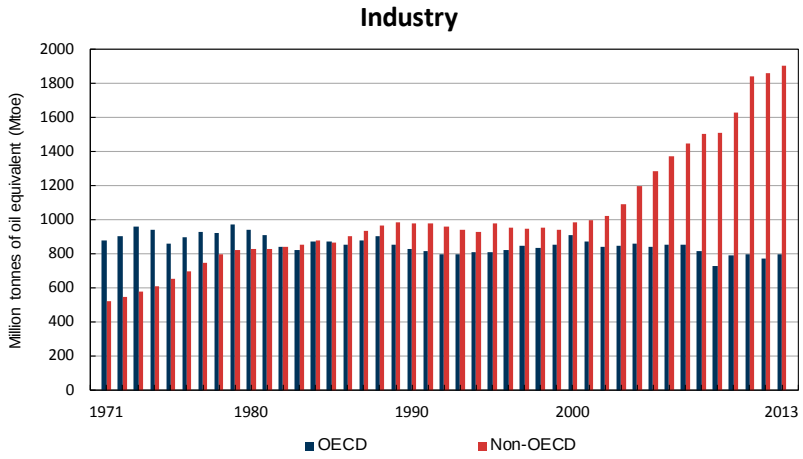


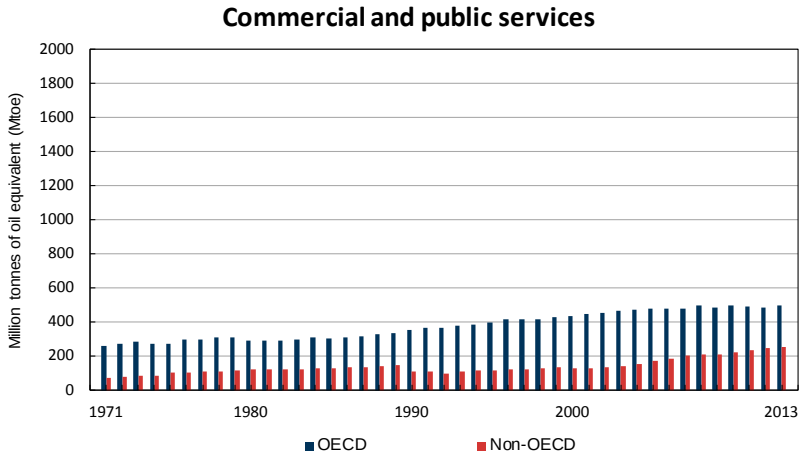


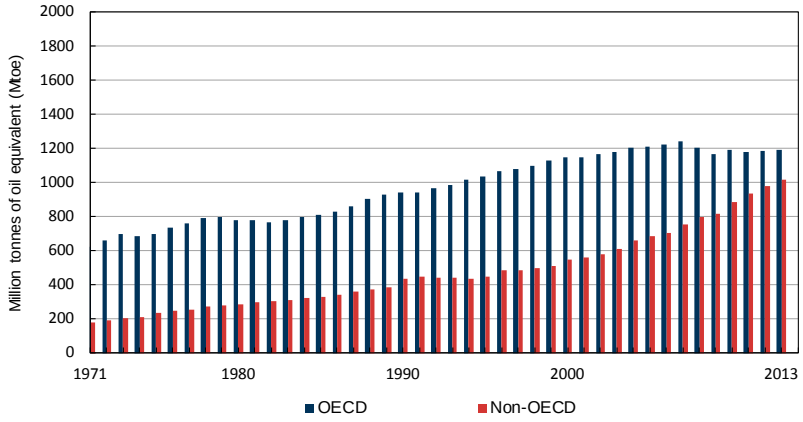
Source: IEA Energy Efficiency Indicators: Essentials for Policy Making, 2014

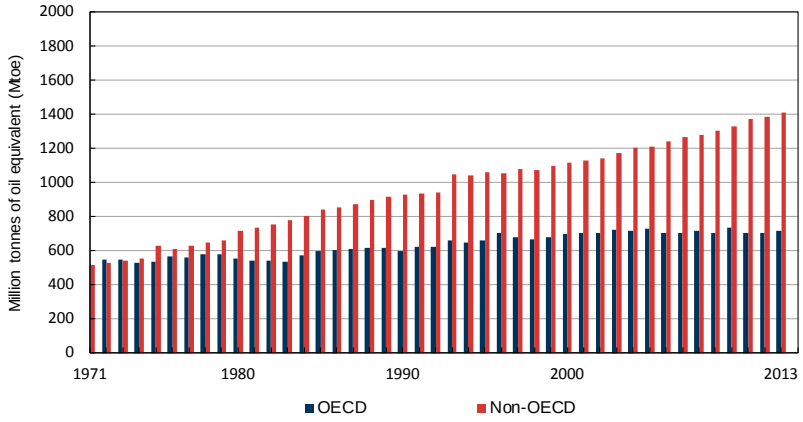
Sub-sector, end-use, or even technology indicators give sharper understanding of transition pathways

Final energy use by sector



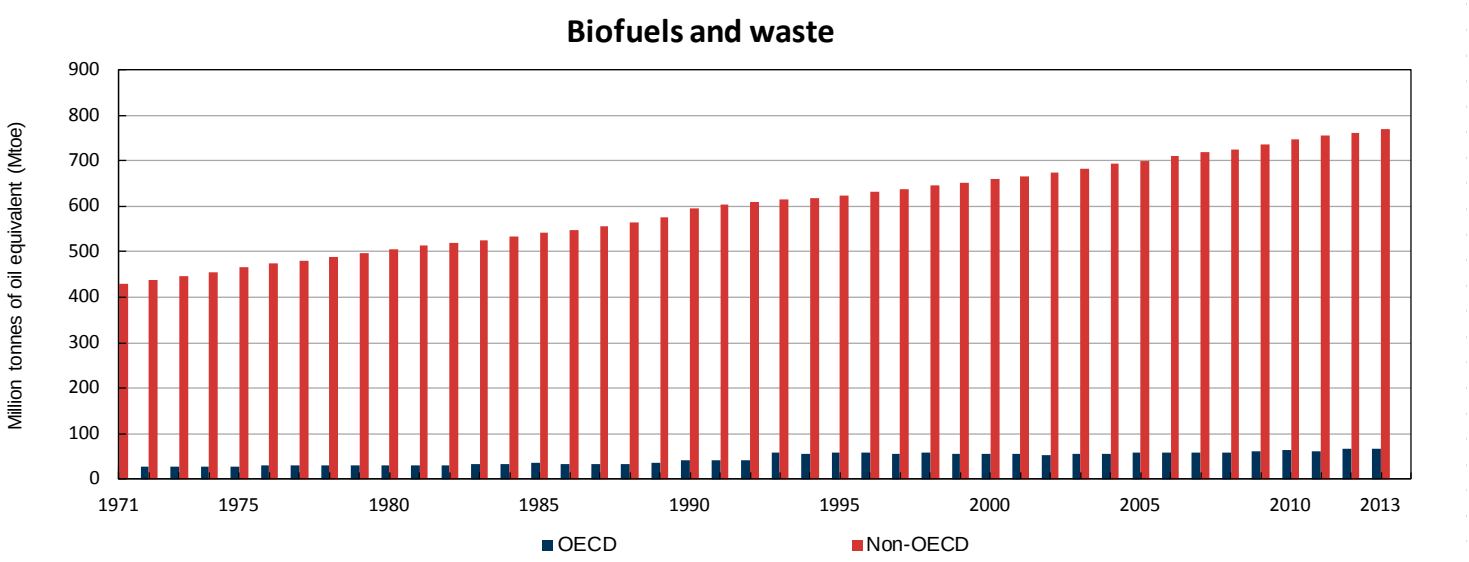


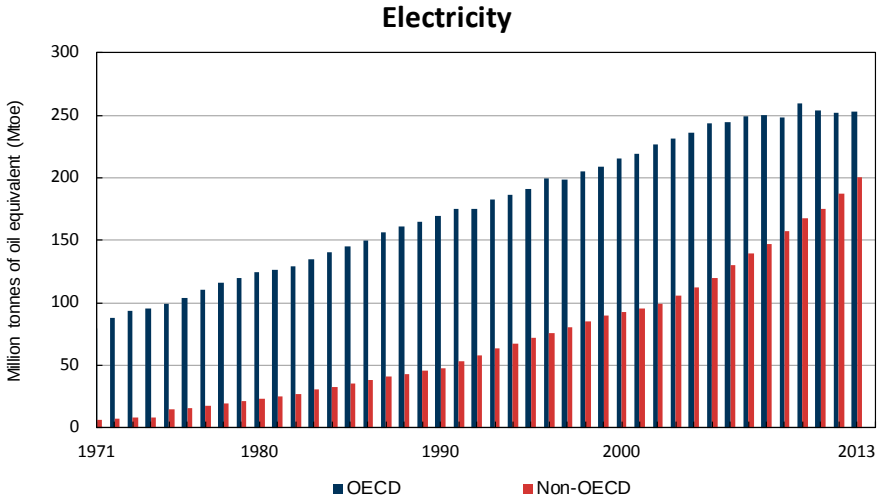


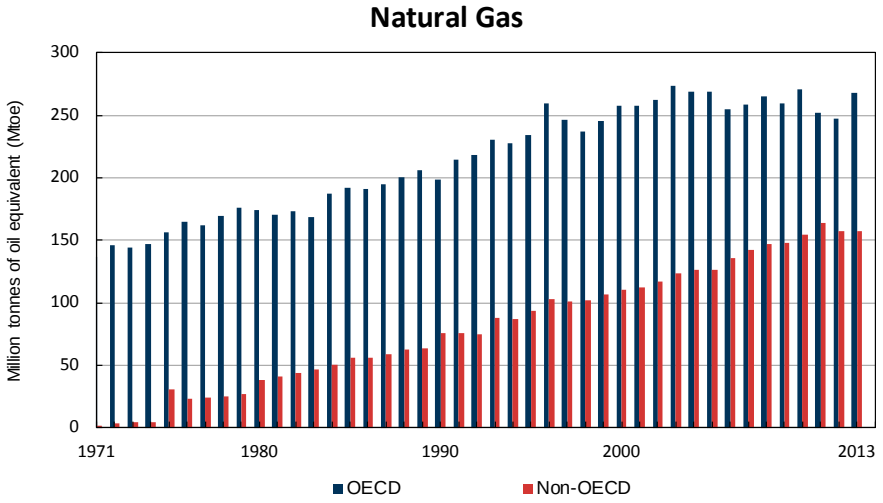


Source: IEA World Energy Balances, OECD/IEA, Paris, 2015.

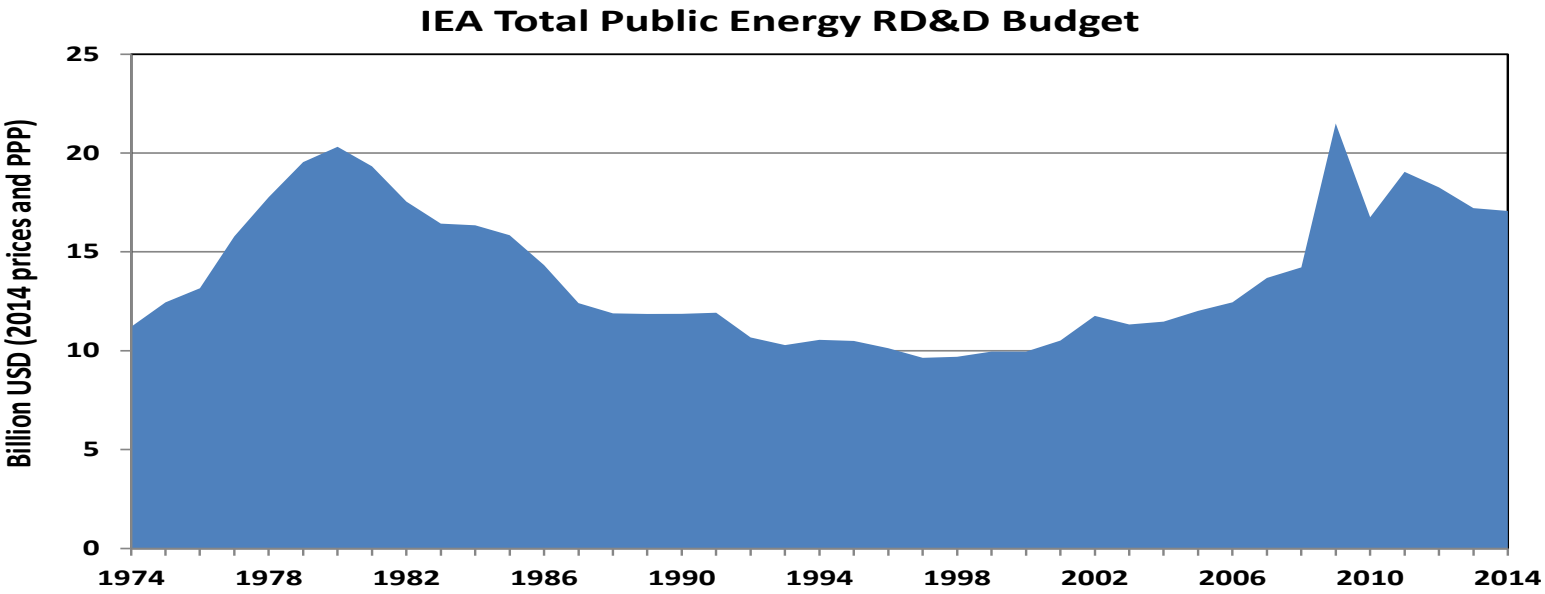
Residential consumption







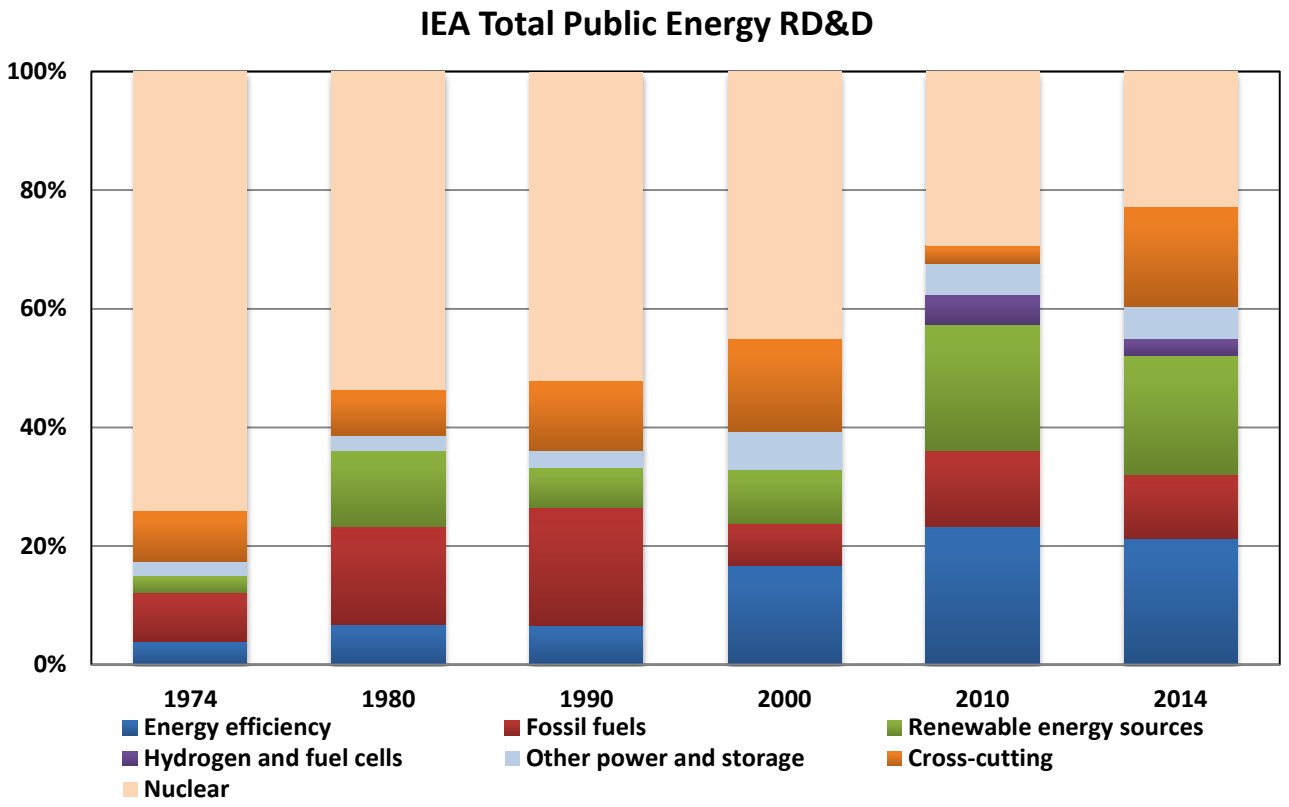
Investing in clean energy research is key



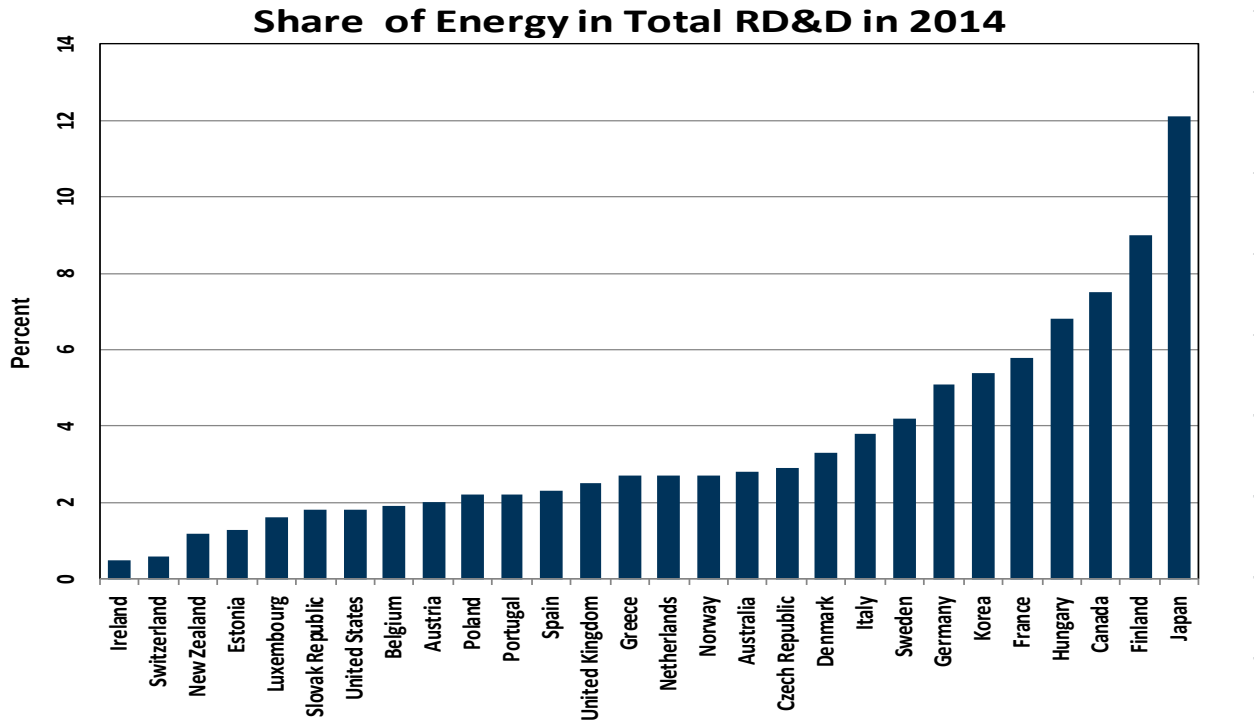
Source: IEA Energy Technology Research Development and Demonstration database, 2015

IEA currently monitors public expenditure in OECD, vital for understanding Mission Innovation

Public RD&D by “fuel”



Room for growth?



Source: IEA Energy Technology Research Development and Demonstration database, 2015

IEA keen to cooperate to develop a more comprehensive picture of energy technology RD&D, including private and non-OECD

Towards tracking the energy transition, requirements:

- A transparent tracking framework
- A broader set of metrics and data than those currently collected globally
- Countries committed to scale-up capacity to maintain and enhance their energy data, including energy use, research and investment

IEA keen to act as a center of global expertise: statistics, technology and modelling