



Directorate-General
for Energy
and Transport



EUROPEAN
COMMISSION

- ***The role of coal and CCS in the European energy supply***

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● Background

- The use of fossil fuels in power generation leads to approximately 40% of all CO₂ emissions in the EU.
- EU climate objective: stabilisation of GHG at 450 ppmv
- Globally, emissions will need to peak within the next 10-15 years, followed by substantial reductions of 50-85% by 2050 to ensure that global average temperature increases do not exceed pre-industrial levels by more than 2 °C.
- Energy security is a public good – public authorities are ultimately responsible for a market design that ensures sufficient power and fosters investments to meet future electricity demand.

● The role of coal in the energy mix

- Coal is a large contributor to EU energy supply
- Coal has a share of around 18 % in the EU-27 total energy consumption in 2006.
- Significant effect on changing the energy mix of the EU with the new MS contributing 57 % of the EU-27 solid fuel production.
- More than one third of power generation in the EU is based on coal.
- Two thirds of EU coal consumption is derived from indigenous production.

● Advantages and problems of coal

- + coal is a domestic fuel at a significant share
- + coal is an abundant energy source which is globally available
- + coal price is comparable stable
- + well understood conversion process

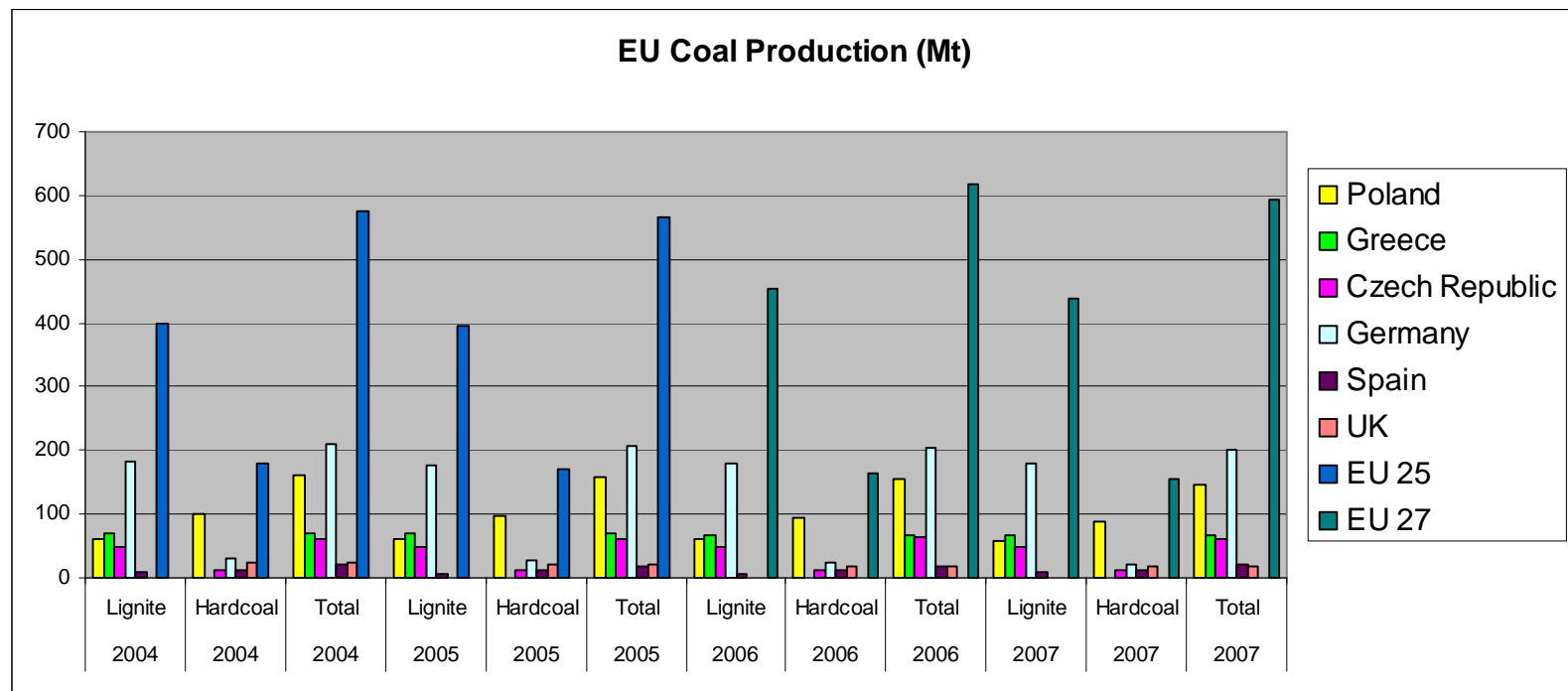
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- coal is the most carbon intensive fuel
 - environmental concerns



EU-27 coal production: 595 million t in 2007:

hard coal production: 156 million t

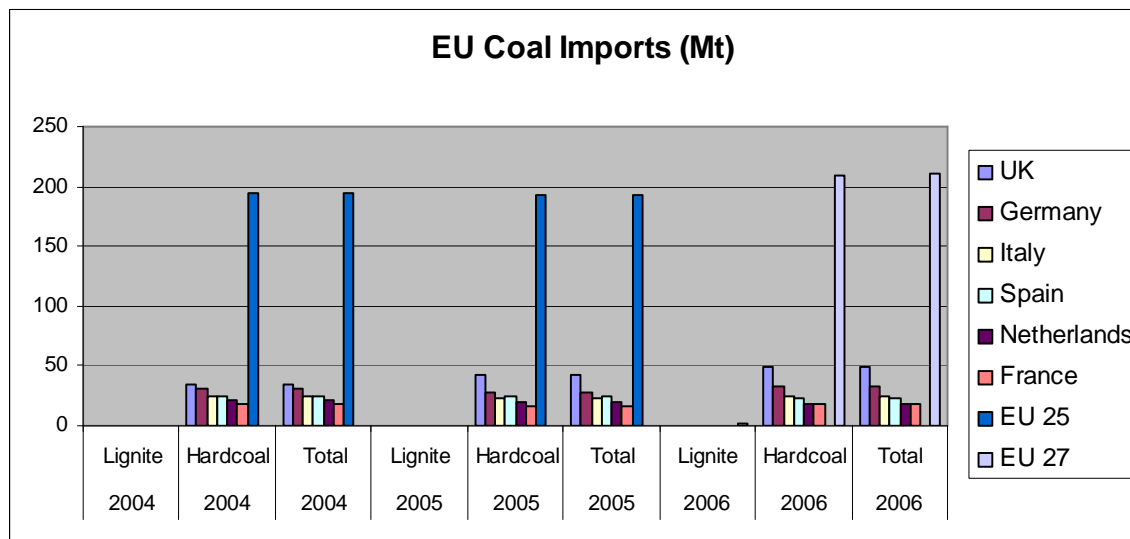
lignite production: 438 million t



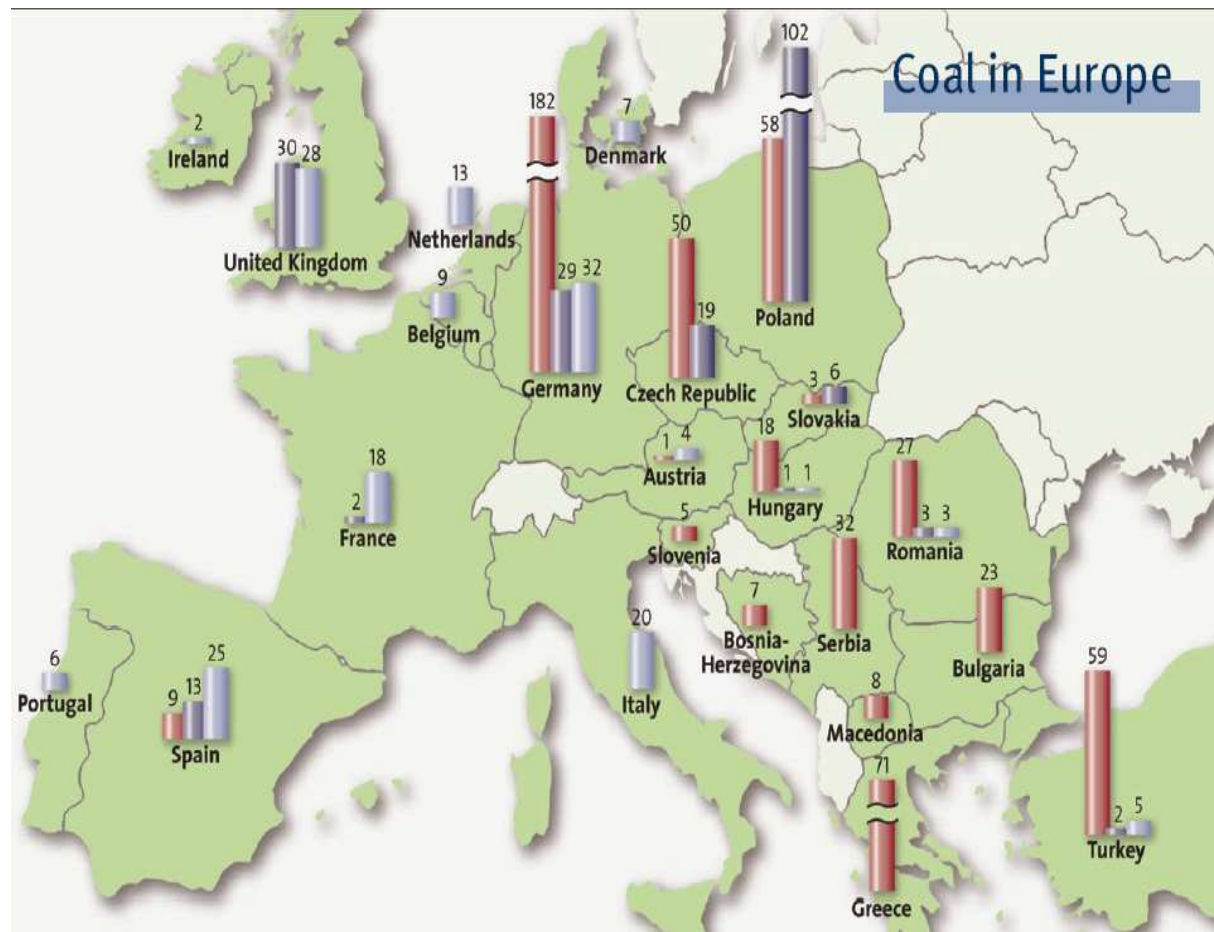
Total coal consumption of the EU-27: 830 million t in 2006

Increasing consumption of hard coal: 366 million in 2004 to 377 million t in 2006- used as steam coal in power sector (70 %) and by coke production (18 %)

Increase of hard coal imports: 194 million t in 2004 to 210 million t in 2006



Coal in Europe – Euracoal (red-lignite/black-hard coal/grey- coal imports)



● 2nd Strategic Energy Review (SEER II)

- Adopted by the Commission on 12 November 2008 - full debate in next months
- Political agenda for the energy policy for the short/medium term
- Follows on the SEER I of January 2007 and the Green Paper “ A European Strategy for Sustainable, Competitive and Secure Energy”
- Main theme of SEER II:
Energy Security -package of legislative proposals and regulatory measures

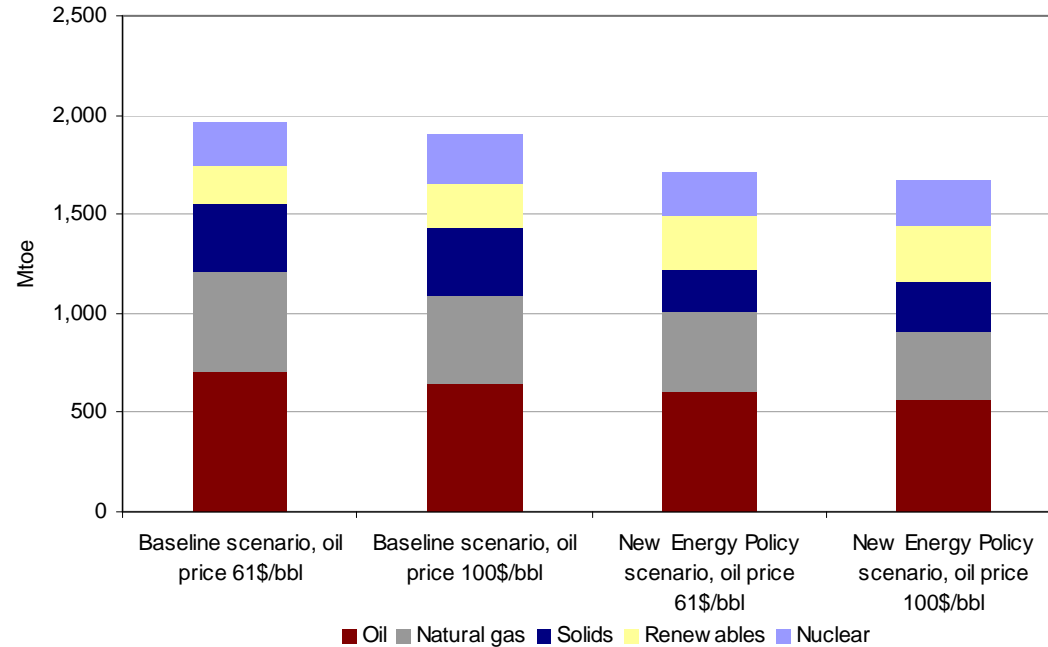
● EU Energy Security and Solidarity Action Plan: 5 pillars of a European approach to energy security

1. Infrastructure
2. International cooperation
3. Crises mechanism, stocks and storage
4. Energy efficiency
5. Energy resources – Making the best use of the EU's indigenous energy resources: Renewable Energy, **Coal**, Oil and Gas, Nuclear energy.

The use of coal is only compatible with the climate challenge if highly-efficient plants predominate and CCS is widely available.

Energy mix – 2020

Fossil fuels = from 80 % to [70 – 80] %
 RES = from 7 % to [10 -16] %
 Carbon free sources = from 21 % to [21 – 30] %



● Role of CCS

- Coal and other fossil fuels will remain important part of the EU and global energy mix but solutions addressing carbon footprint needed.
- Achieving a optimal future energy mix that can deliver the EU climate target at the lowest cost.
- Demand of climate-friendly energy generation and the replacement of aging conventional generation facilities
- CO2 Capture and Storage – obvious choice; technology present – but not scale

With current share of fossil fuels and technologies, the EU will not achieve its climate change objectives at a cost that is economically sustainable.

● Contribution of CCS to climate goals

- Impact already in 2020
- Major contribution expected after 2020

In 2030

- 160 Mt captured on market-based scenario
the required 32 % reduction in 2030 would be 60 billion € (40%) more expensive without CCS
- Carbon price in 2030 would be much higher than would otherwise the case

Delay of demonstration by 7 years would mean extra 90 Gt of CO₂ emitted globally by 2050

● Costs and benefits of CCS

● Costs:

- » R&D (€1bn) and demonstration (€10-20bn)
- » further investment to roll out CCS on a wide-scale

● Benefits:

- » 20-28 % of global CO₂ emission reduction by 2050 (IEA)
- » for managing future CO₂ emissions of dynamically developing coal users (China, India, etc.)

● Policy goal = CCS commercially feasible by 2020:

- » CCS in new-build and in retrofits after 2020
- » Capture - Readiness in the meantime

● EU actions so far

● 2007 Spring European Council

- » target of 20% cut in greenhouse gas emission by 2020
- » enabling low-CO₂ power generation from fossil fuels by 2020
- » up to 12 CCS demonstration plants in operation by 2015

● November 2007: Strategic Energy Technology Plan

- » R&D efforts to focus on low carbon technologies
- » CCS one of strategic technologies: large-scale demos next priority

● 23 January 2008: Commission adopts a set of proposals, including a CCS Communication and a CCS Directive

● Sustainable fossil fuels with CCS

● Key hurdle: financing

- » Good start: industry already announced over €11bn
- » Earmarking part of ETS revenues under debate
- » Further commitment from industry and public sources required for concrete projects

● Several important initiatives under way

- » EU level: ETS/CCS Directives, CCS project network
- » National level:
 - UK competition: one CCS demonstration project by 2014
 - Norway: 2 projects with state aid
 - More of the same needed

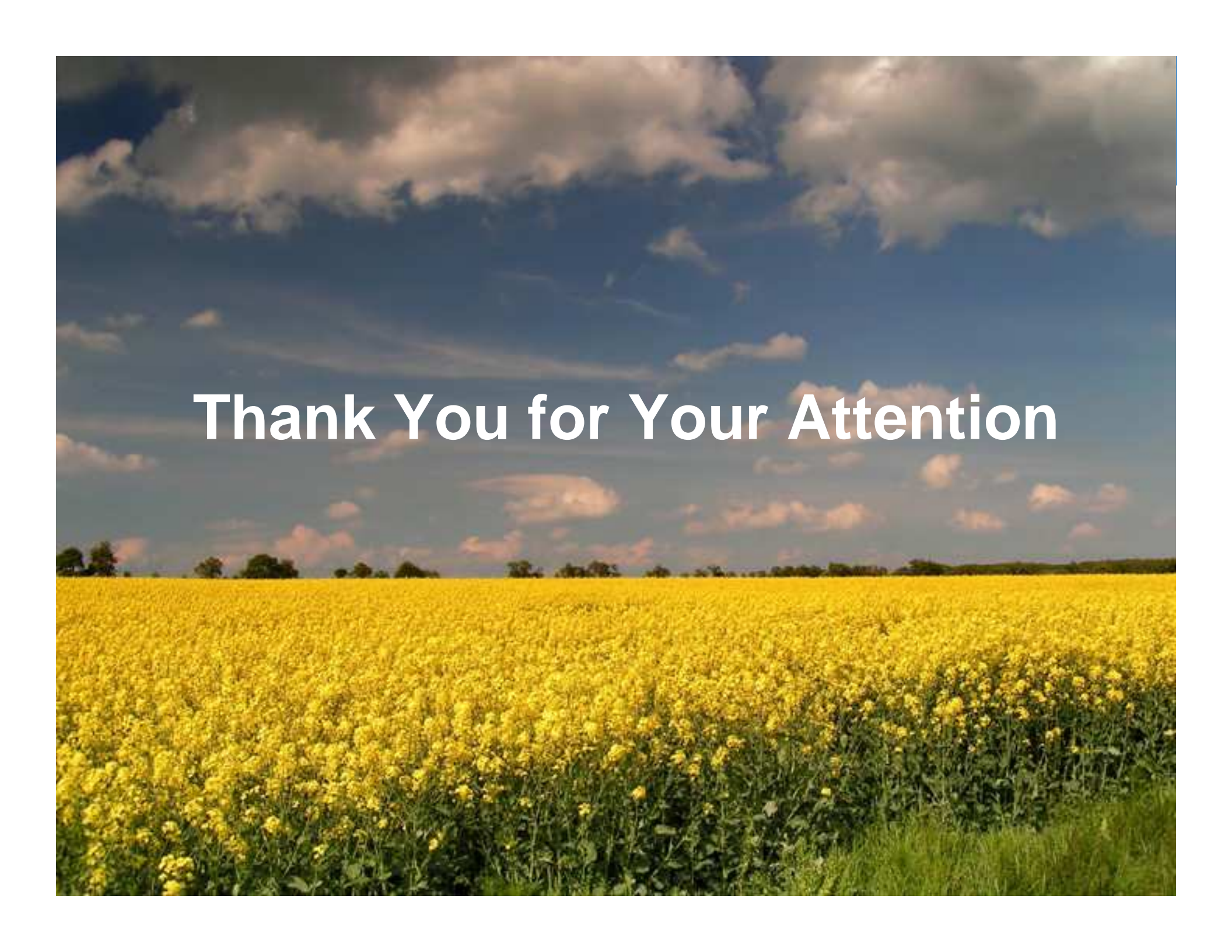
● Outlook

- Member States determine whether and where CCS will happen.
- Electricity utilities will have to undertake massive investments in clean coal technologies for power generation.
- Companies decide whether to use CCS on the basis of conditions in the carbon market.
- CCS development is essential to deliver emission cuts in third countries and to put EU industries at the forefront of the rapidly growing low carbon technology sector.



Outlook

- **The transition to a low carbon economy will have profound consequences for energy security, for climate change, for growth and jobs.**

A wide-angle photograph of a vast field of yellow rapeseed flowers in full bloom. The field stretches to the horizon, with a line of green trees visible in the distance. The sky is a deep blue, filled with soft, white, and light-colored clouds. The overall scene is bright and cheerful, suggesting a sunny day in a rural landscape.

Thank You for Your Attention