



The distance between the power station and the CCS storage facility can extend to distances of over 500 kilometres



The CO<sub>2</sub> is pumped to a depth of about 1.5 km or more

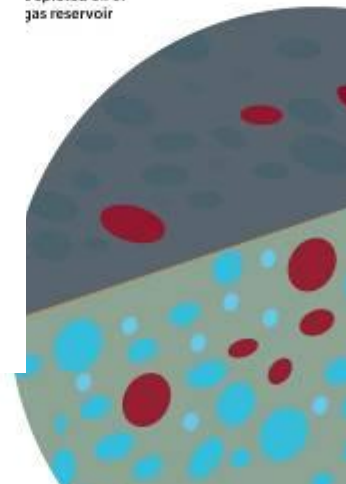
Depleted oil or gas reservoir

Directorate-General  
for Energy



# European perspective on clean coal technologies- CCS policy

Kalliopi Kalesi  
DG ENER, Coal and Oil Unit  
Stockholm, 14 April 2010



# ● Content

- Generally on CCS context and policy
- Financing CCS demonstration
- Preparing for deployment

# **CCS context: EU climate and energy strategy**

## **EU climate strategy 20-20-20:**

- » -20% GHG, +20% RES and +20% EE
- » CCS is an essential part of the package
- » Contribution to global climate strategy - < 2° C in 2050

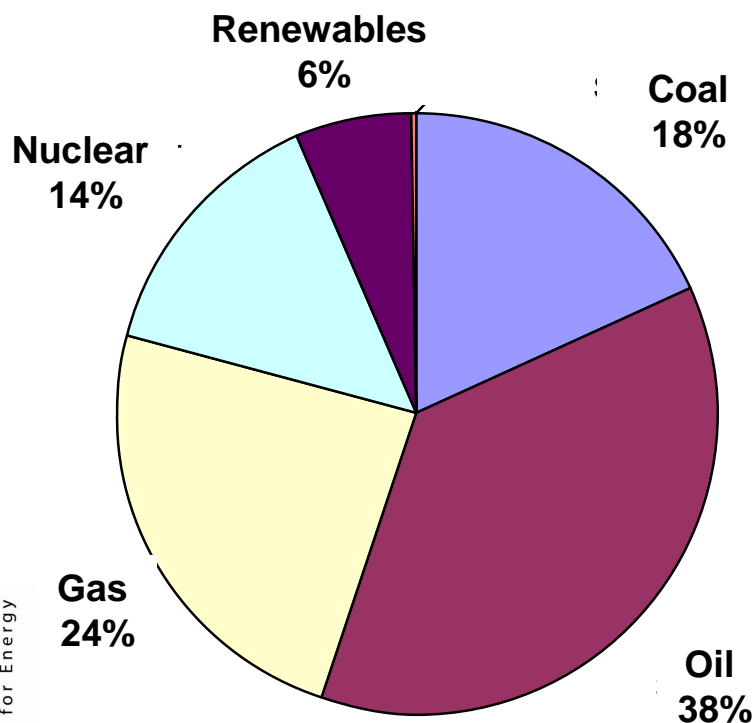
## **2<sup>nd</sup> Strategic Energy Review (SER):**

- » Highlights the role of indigenous energy sources including fossil fuels
- » Coal recognised as an essential component of EU's domestic energy supply

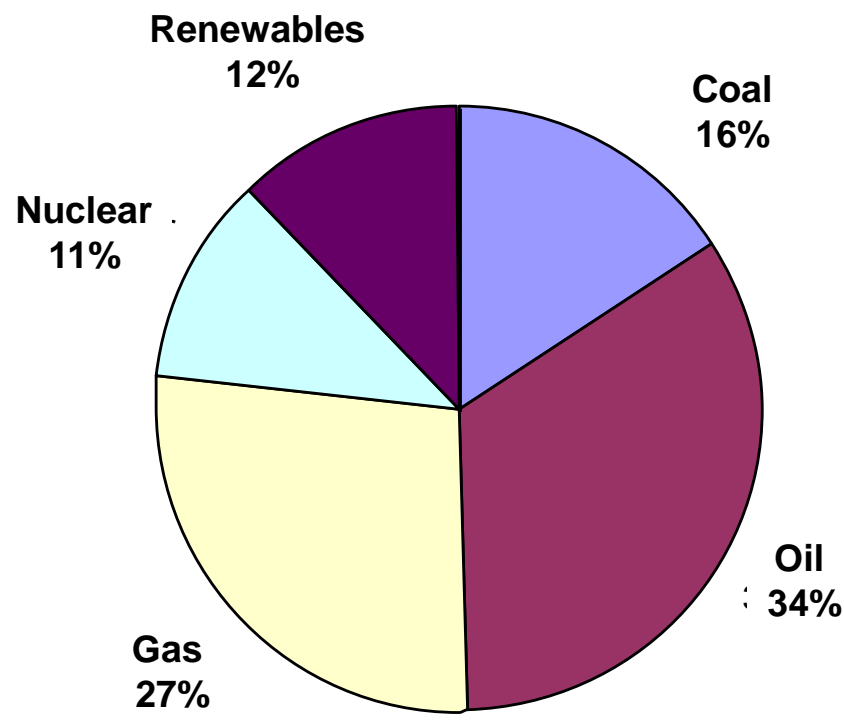
# CCS context: EU policy

- **January 2007: 1<sup>st</sup> CCS Communication COM(2006) 843 final - Low-CO2 power generation from fossil fuels**
  - Commercial viability by 2020
  - CCS in retrofits and in new plant thereafter
  - Capture-readiness in the meantime
- **2007 Spring European Council**
  - Reduction of 20% GHG by 2020
  - Financing of up to 12 demos by 2015
- **November 2007: Strategic Energy Technology Plan (SET-Plan) COM (2007) 723 final**
  - CCS as one of the six strategic energy technologies until 2050
- **January 2008: 2<sup>nd</sup> CCS Communication COM(2008) 13 final**
- **April 2009: ETS Directive 2009/29/EC**
  - Budget: 300m allowances from ETS-NER for CCS and innovative renewables
- **April 2009: CCS Directive 2009/31/EC**
- **April 2009: Recovery Package Regulation EC 663/2009**
  - Budget: €1.05bn for CCS

# The urgency for CCS: share of coal in Europe's energy supply still important in 2030



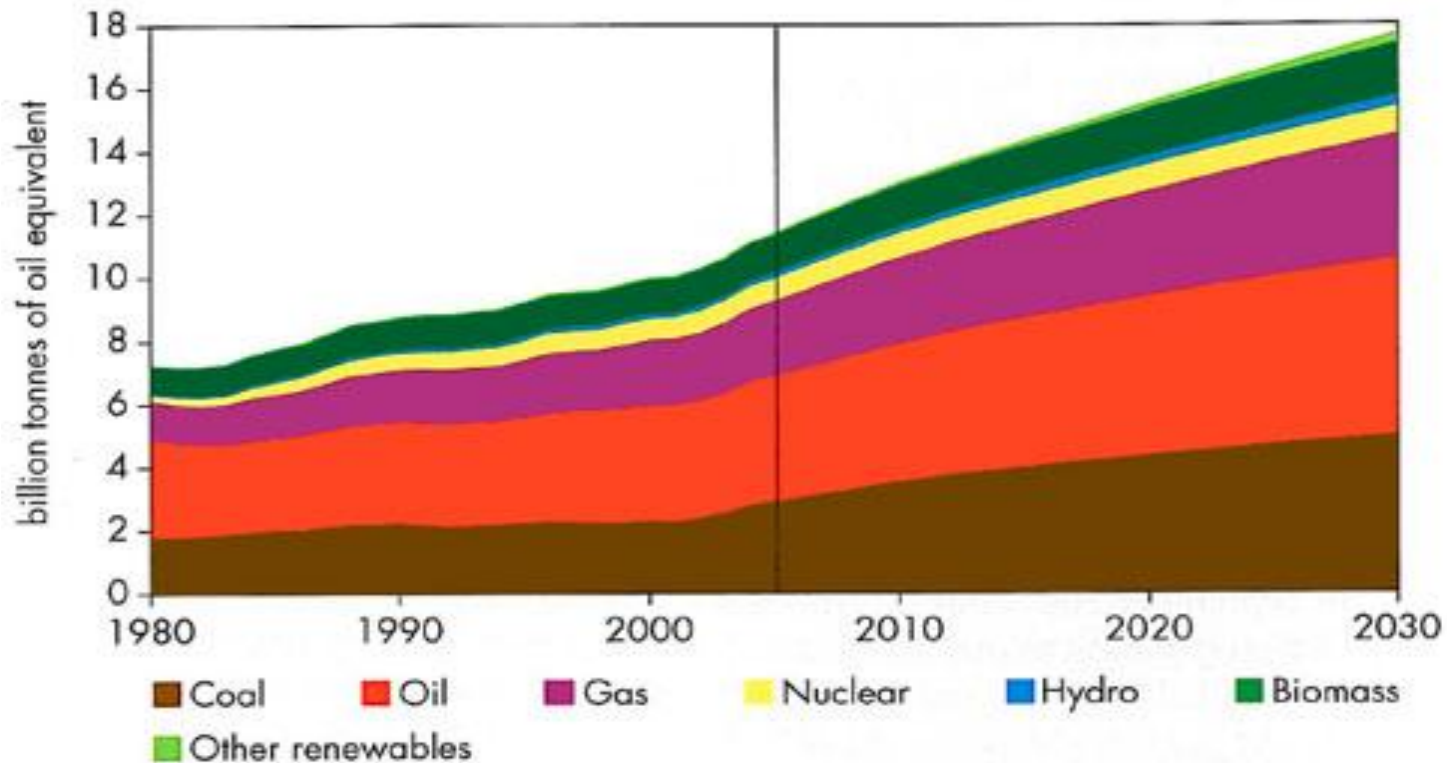
2004



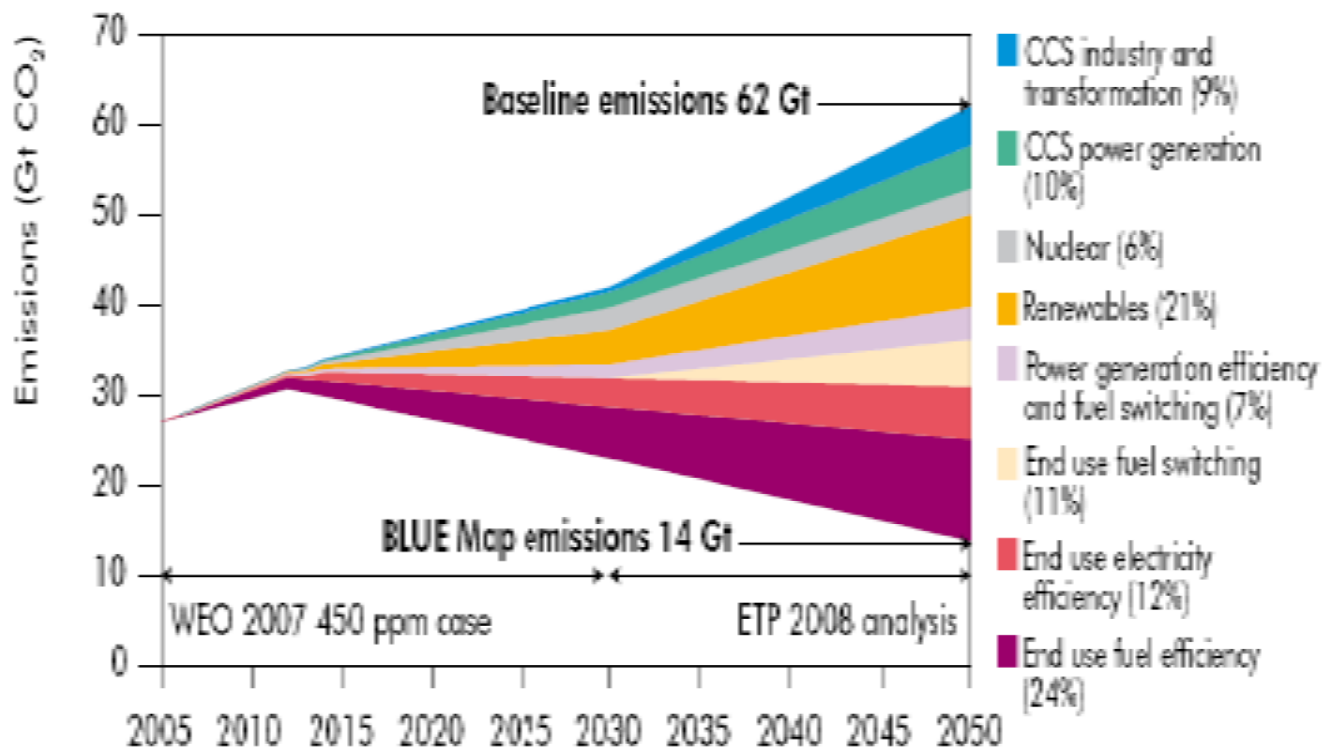
2030

Source: EUROSTAT

# IEA: Share of coal in global supply in 2030 is set to rise



# IEA: Climate stabilisation to 450 ppm requires 19% CCS



# CCS challenges - EU actions

## 1. Regulatory framework

- **Directive 2009/31/EC on CO2 storage** to be transposed by June 2011

## 2. Long-term economic viability

- CCS under the Emission Trading System (ETS)

## 3. Financing industrial-scale CCS demo projects

- €1 billion awarded to 6 CCS demonstration projects - European Energy Programme for Recovery (EPR)
- 300m NER allowances

## 4. Public awareness

- FP7 project NearCO2
- CCS Network

## 5. International cooperation

# ● CCS Directive 2009/31/EC

## ● What it brings

- » Regulatory requirement for storage safety
- » Companies can decide on CCS use, based on market conditions (technology, carbon)

## ● CCS is not mandatory, but Member States (MS) need to verify if:

- » Storage capacities and transport facilities are available
- » Retrofitting is technologically feasible
  - **CAPTURE READINESS**

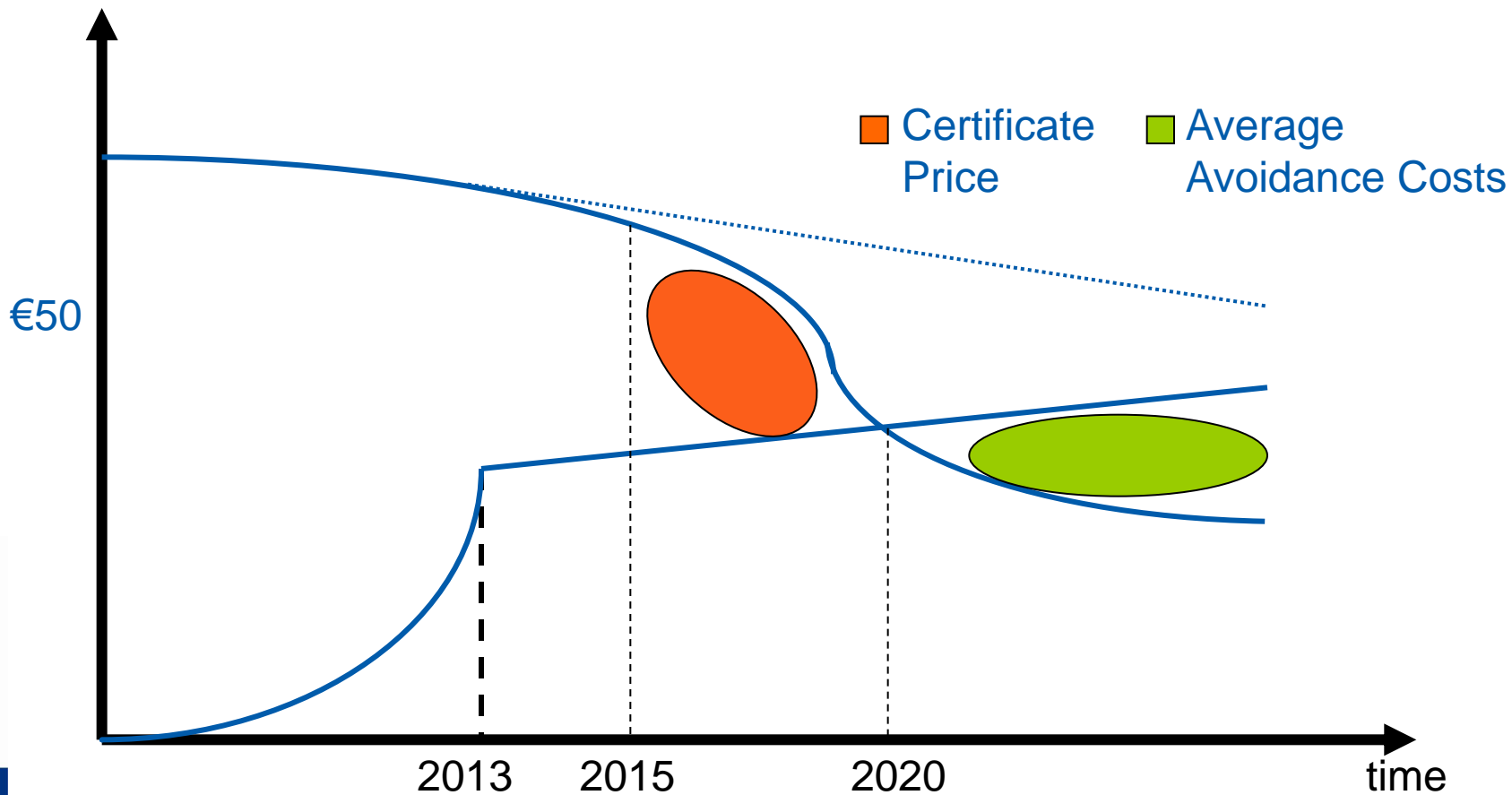
# ● ETS Directive 2009/29/EC: economic viability of CCS

## ● EU Emission Trading System 2013-20 (3<sup>rd</sup> phase)

- » Brings about a robust CO<sub>2</sub> price to narrow the CCS financing gap
- » Recognises CO<sub>2</sub> emissions from CCS plant as non-emitted
- » ETS allowances must be surrendered for any leakage
- » Sets aside NER 300 million allowances for CCS demonstration to drive technology costs down
- » Stipulates that 50% of auctioning revenues should fund climate change mitigation actions, including CCS

# Economic viability of CCS under ETS

Additional cost for CCS per ton CO<sub>2</sub>



# ● CCS Demonstration Financing

## ● Financing

- » EEPR, ETS NER300, FP7
- » EU funding will be limited and will not cover the full operational costs for CCS
- » Additional financing from industry and/or MS **REMAINS CRUCIAL!**

## ● MS and EC must:

- » Ensure timely transposition of CCS Directive
- » Proceed with timely implementation of EEPR
- » Ensure timely implementation of the ETS NER300

# ● CCS Demonstration Financing - EEPR

## ● European Energy Recovery Programme

- » Total budget: approx. €4 bn
- » €1 billion awarded to six CCS demonstration projects, including Vattenfall's project in Jämschwalde, Germany.
- » Maximum €180 million per project for additional investment-related expenditure for CCS

## ● Progress to date:

- » Commission Award decision: December 2009
- » Signature of first three Grant Agreements: January 2010
- » Remaining Grant Agreements signed in spring 2010
- » EC Progress Report to the EP and Council: spring 2010

# ● CCS Financing - FP7

- **Funding CCS and clean coal technologies (CCT)** to support early demonstration, prepare for commercial deployment, address public awareness
  - » Area 5, CCS: capture technologies, storage site development and public awareness
  - » Area 6, CCT: efficiency increase in power production with a view on CCS
  - » Areas 5 and 6, cross-cutting: integrated concepts of highly efficient power plants with CCS

## CCS Financing - ETS

- **Market-based mechanism to promote low-emitting sources and technologies, incl. CCS (2013-20)**
  - » Recognises CCS
  - » Up to 50% from auctioning revenues for climate mitigation- including CCS
  - » Sets aside 300 million allowances from ETS – NER (2013-15)
    - Fully complementary to EEPR
    - First funding decisions: winter- spring 2011

# **CCS Project Network - added value to first-movers**

1. Facilitate identification of best practices and enable knowledge sharing amongst projects;
2. Provide a common EU identity to Network members;
3. Leverage experience of projects in order to gain public confidence about CCS;
4. Promote CCS, EU leadership and cooperation potential to third parties/countries.

# ● CCS European Industrial Initiative

- **The CCS EII aims to deliver on the CCS Technology Roadmap, adopted in October 2009 in Stockholm**
- **The CCS EII TR aims to:**
  - » Demonstrate and further develop CCS technologies to allow for their subsequent wide-spread use in all carbon intensive industrial sectors;
  - » Bring current CCS technologies to commercial readiness by 2020;
  - » Derisk CCS along the entire value chain;
  - » Develop enabling measures for transfer from demonstration to deployment.

# ● CCS international cooperation - bilateral

## ● Stakeholders

- » Other technology developers (US, Japan, South Africa, Australia, Canada)
- » Technology users (EU-China Memorandum of Understanding on Near Zero Emissions Coal, India)
- » Clean Coal Working Groups with India, South Africa and others

## ● Over time, the two groups - technology developers and users - may merge

## ● Peer-to-peer exchanges

# ● CCS international cooperation - multilateral

## ● EC as member of global forums

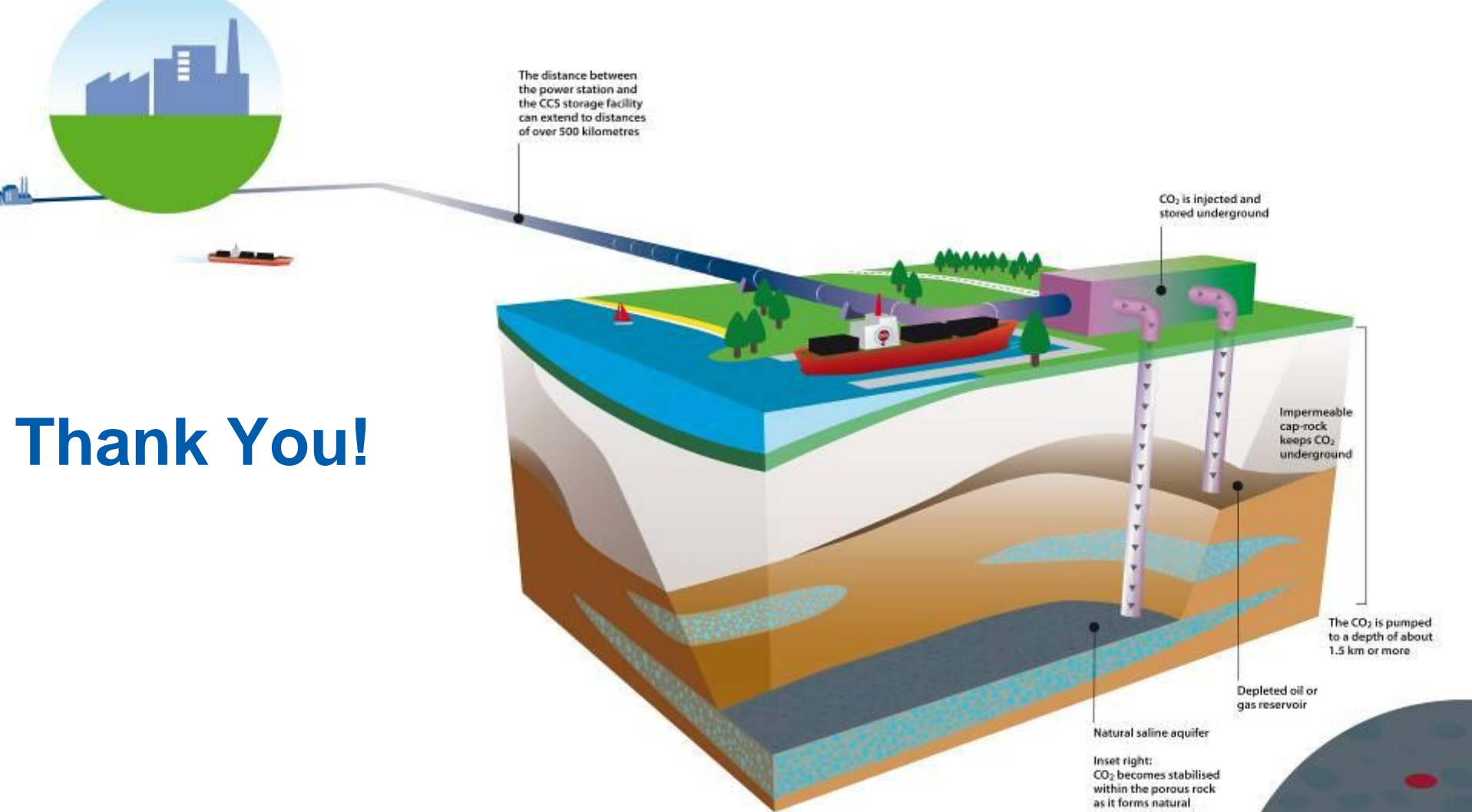
- » CSLF (Carbon Sequestration Leadership Forum)
- » GCCSI (Global CCS Institute)
- » IEA: Working Party on Fossil Fuels, Clean Coal Centre, Greenhouse Gas Programme

## ● Knowledge sharing

## ● Capacity building to accelerate CCS uptake

## ● UN System

- » A globally agreed emissions reduction trajectory
- » Debate on the need for a global price for carbon



Thank You!

[Kalliopi.Kalesi@ec.europa.eu](mailto:Kalliopi.Kalesi@ec.europa.eu)

[ec.europa.eu/energy/coal/sustainable\\_coal/ccs\\_en.htm](http://ec.europa.eu/energy/coal/sustainable_coal/ccs_en.htm)