

# CCS: From demonstration to deployment

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# What is ZEP?

# European Technology Platform for Zero Emission Fossil Fuel Power Plants



## **ETP Role:**

define a strategic agenda for the development and deployment of technologies in the EU involving major economic or societal challenges.

- Initiated by the European Commission in 2005
- Unique coalition of stakeholders:  
European utilities, petroleum companies, equipment suppliers, scientists, academics and environmental NGOs
- Over 300 members from 19 countries

## ZEP's Objective



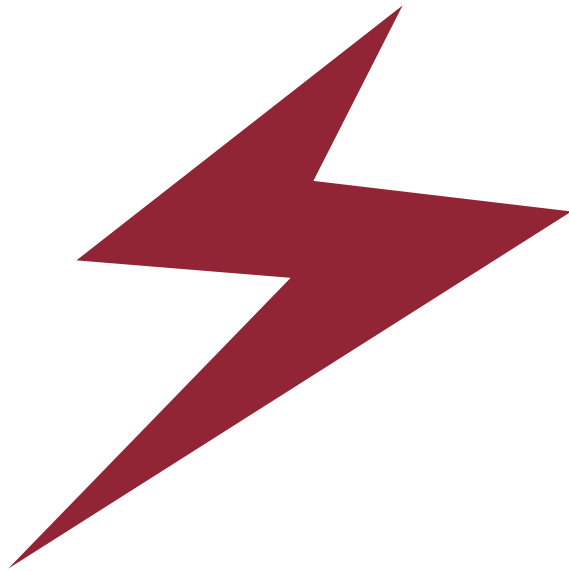
**Enable commercial availability  
of CCS by 2020 and kick-start  
widespread deployment**

# Why do we need CCS?

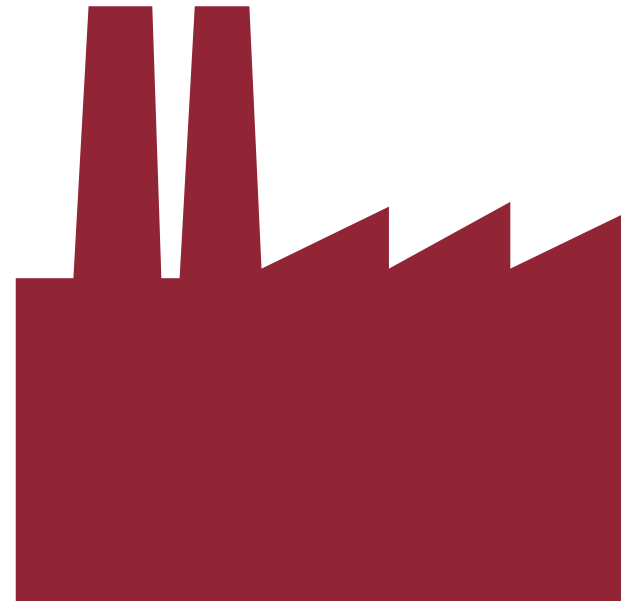
# Applying CCS



Not just power generation...



but heavy industry too!



## A Key Solution for the EU

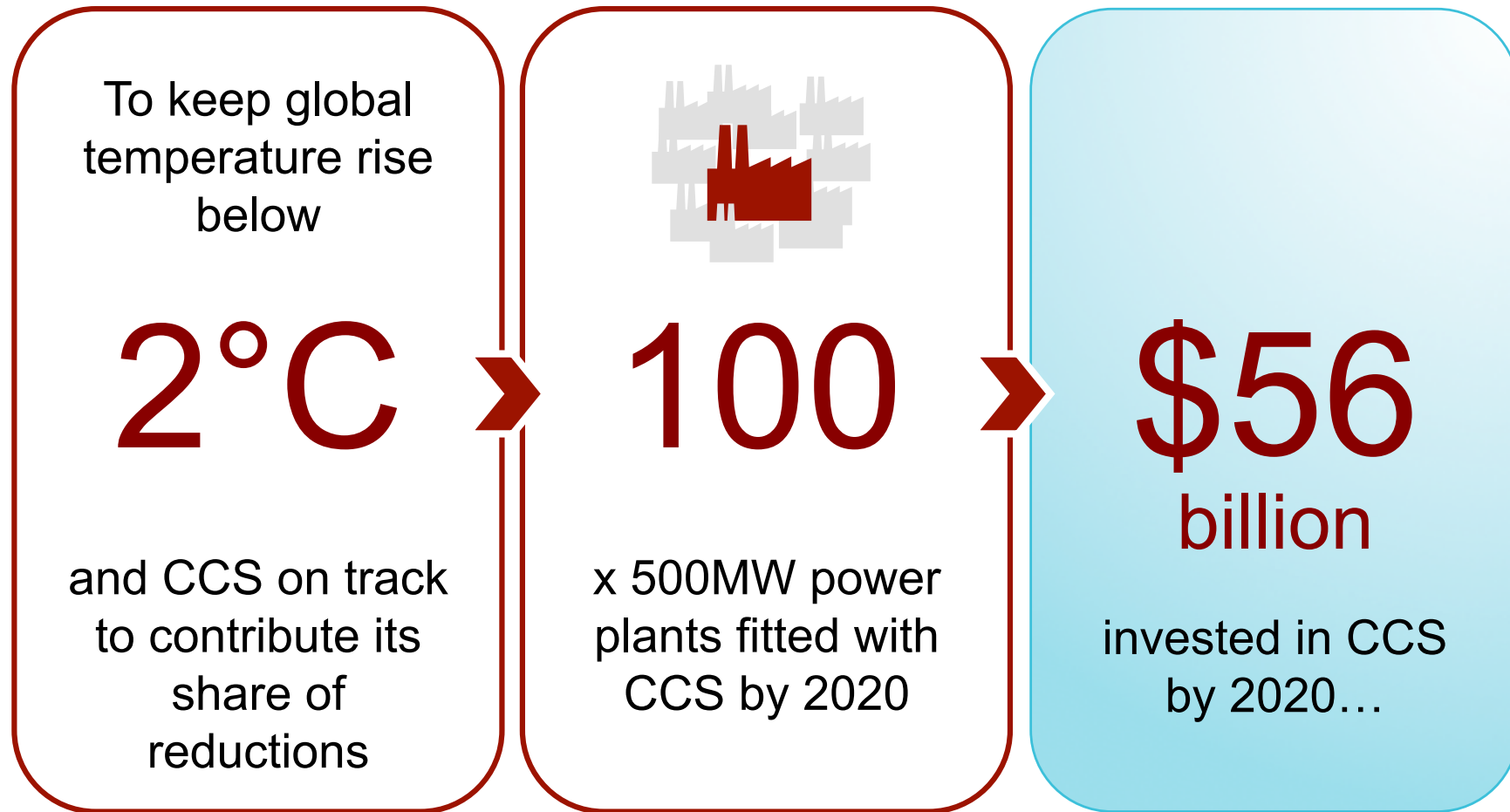
- › IEA forecast for 2030 Emissions = 4.2 Gt CO<sub>2</sub>/year
- › IEA alt. policy scenario incl. CCS = 2.8 Gt CO<sub>2</sub>/year

Solution:



CCS =  
crucial contribution already before  
widespread deployment

# Context





# A Key Global Solution



➤ CCS needs to deliver approx.



of the required global GHG cuts by 2050!  
(IEA)

# EU leadership on CCS

# EU leadership on CCS

# 2007



EU calls for CCS  
demo programme  
by 2015

# 2009

EU CCS  
directive



EU CCS  
funding



**in place!**

# ZEP as advisor on entire range of activities

**2007 ZEP Vision** for EU CCS demo programme



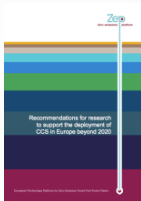
**2008: ZEP proposal for CCS demo programme**



**2009: ZEP recommendations on NER funding**



**2009: ZEP CCS knowledge sharing proposal**



**2010: ZEP Long-Term R&D report**



**2008: EU agrees to co-fund programme**

**2009: EU passes legislation on CO<sub>2</sub> geological storage**

**CCS Project Network launch**

**2010: CCS European Industrial Initiative + CCS Roadmap (within SET plan)**

# A succesful CCS demonstration programme

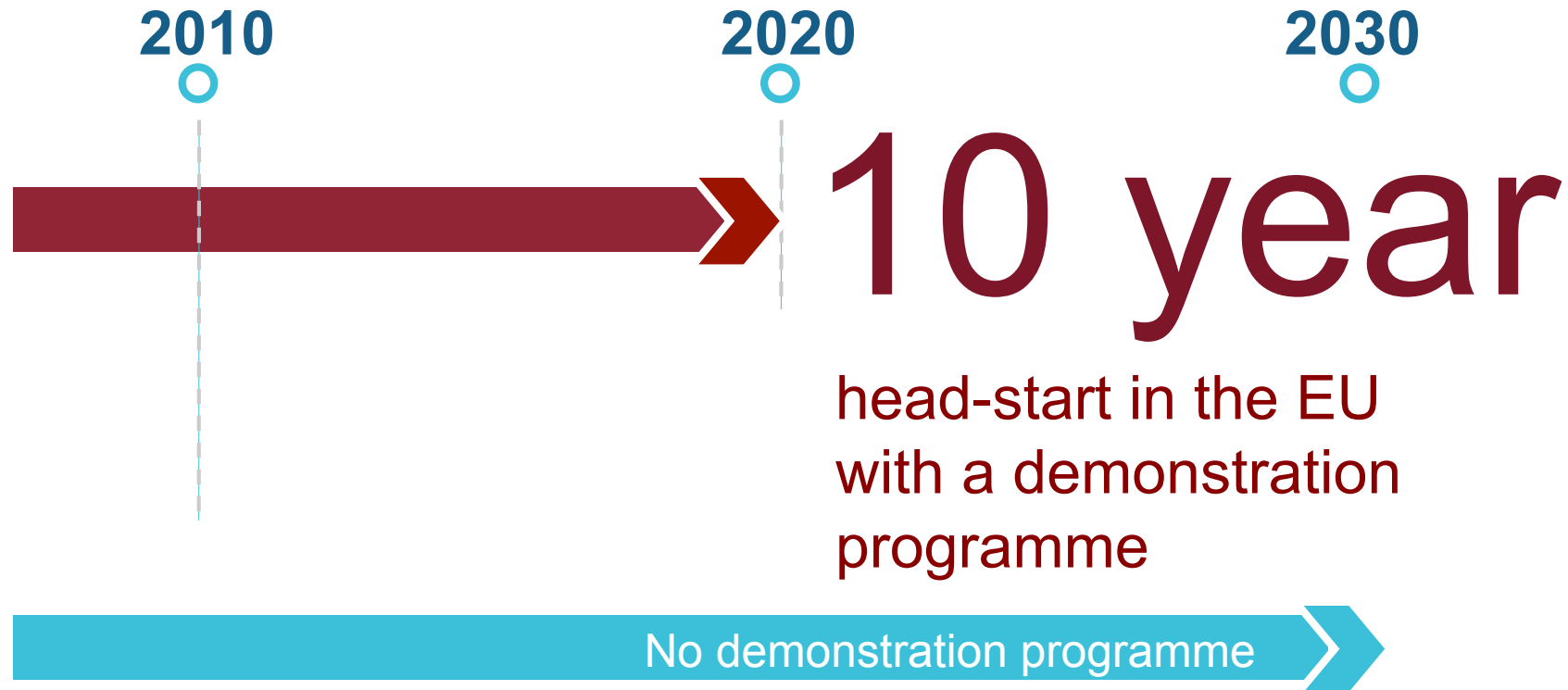
# Why?

Objective: Enable commercial availability of CCS (2020)



Brings forward a deployable technology  
at an affordable cost!

# Giving CCS a 10 year head-start in the EU



# Large-scale projects under consideration



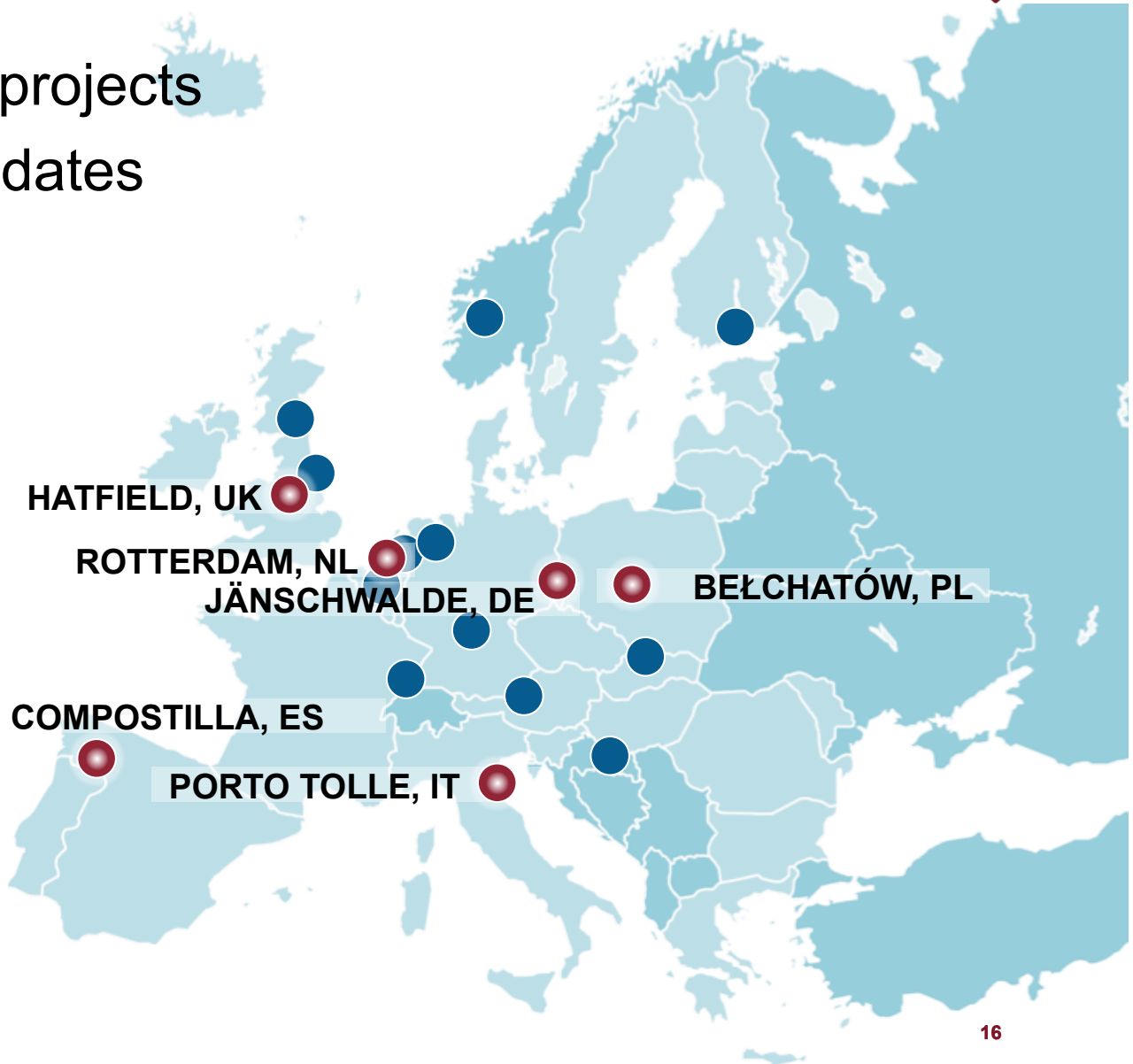
👉 ● EEPR selected projects

● Additional candidates

Indicative - Non-exhaustive

## NER300 Timetable:

- Feb. 9: Proposals to MS
- May 9: MS applications to EIB
- By Feb. 9 2012: EIB evaluation & ranking
- 2H 2012: funds awarded





# Status of CCS applicants for NER300 – world's largest CCS funding mechanism



22

## Catch CO<sub>2</sub> or Catch-22?

- Invest today, lose money on CCS
- Don't invest today, lose money on CCS in the future

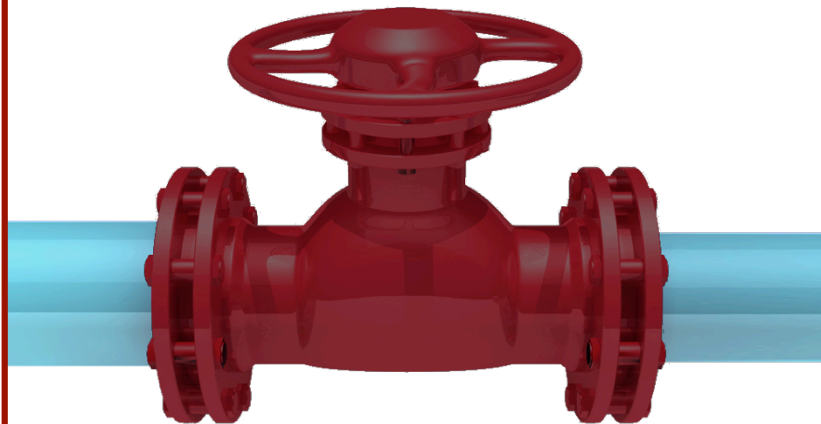
Don't invest today  
or tomorrow,  
then costs  
**+70% by 2050**  
(IEA BLUE Map scenario)



- How to fill the funding gap without draining public coffers?
- How to facilitate widespread deployment of CCS without jeopardising security of supply?

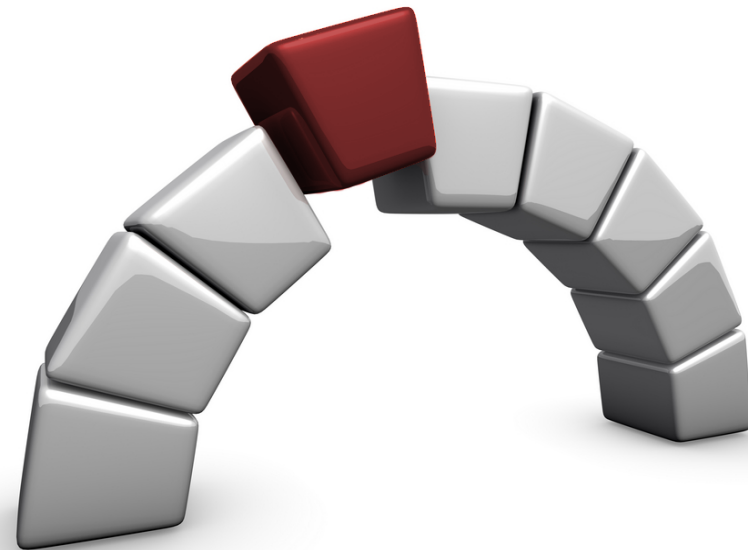
# The challenges

## Establish national regulatory frameworks



- ▶ Strong regulatory framework and **manageable** risk exposure
- ▶ Free flow of CO2 to best storage sites + MRV regs.

## Close the funding gap



- ▶ Additional MS support essential & in place by end-2011
- ▶ NER300 2nd tranche focus on ensuring optimal portfolio

# The challenges

## Prioritise CCS R&D



- Project learnings improved by complimentary R&D (FP7 priorities)

## Maximise knowledge sharing



- Ambitious level of knowledge sharing between projects
- EU & international

## Build public support



- Engage in transparent, open dialogue...early!
- All stakeholders to collaborate and adapt
- CCS benefits and safety are priorities

# EU 2050 Energy Roadmap



## 2009 European Council

80-95% reduction in greenhouse gas emissions by 2050, in the context of reductions by developed countries as a group

**GREEN GROWTH RACE**

**CCS**

**=**

**BENEFIT  
& PROFIT**

# Accelerating widespread CCS deployment

## Action required on a range of issues

- CCS & carbon intensive industrial sectors
  - Industrial applications, development of trans-sector clusters
- Towards carbon-negative
  - Biomass co-firing
- Long-term infrastructure plan
  - Comprehensive characterisation of CO<sub>2</sub> storage sites!
- Secure environment for investment
  - Consideration of non-ETS incentive schemes
- CCS in international financing mechanisms

## Action required on a range of issues

- Accelerate R&D into 2<sup>nd</sup> & 3<sup>rd</sup> gen. technology
  - To begin immediately to ensure widespread deployment
  - National & EU coordination
- Realise full potential of CCS
  - Hydrogen production
  - Geothermal
- Maximise international cooperation
- Overarching 2050 energy scenario
  - Realistic and costed >> towards a decarbonised power sector
- **Public engagement and awareness-raising...**



# Communicating CCS: raising the bar

# Observations – climate change

## Polls



# 42%

believe in climate change,  
**down from 62% in 2006**

Source: Der Spiegel

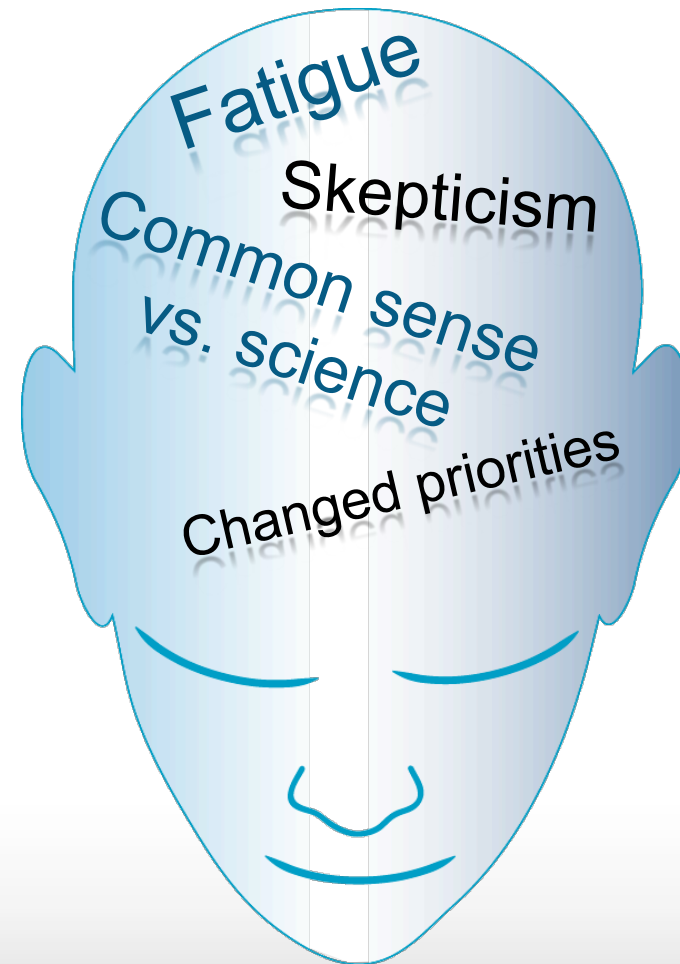


# 26%

believe climate change is happening  
& largely man-made,  
**down from 41% in 2009**

Source: BBC

## Perceptions and beliefs



# Observations – inside CCS

## Numbers

1%

CCS awareness level in Germany

Source: izKlima CCS survey 2009 (1,600 respondents)

## Perceptions and beliefs



# Emotional is rational



## CCS: context and benefits



**Change the dynamic of today's conversation**

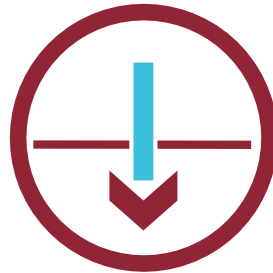
You take, We give!

 **Mutual benefits**

# Provide clear, honest answers



**Long-term  
experience/use**



**CO<sub>2</sub> storage safety:**

- › How safe is it?
- › Is it safe enough?
- › How can we make it safer?



**Potential includes:**

- › Carbon negative
- › Hydrogen production
- › Geothermal

# Communications community



Who?

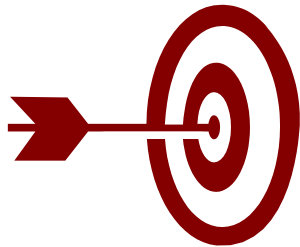
Where?



- International
- Pan-regional
- National
- Local

**Provide context,  
show the links!**

# Effectively communicating CCS



The right message for the right audience



Transparent, factual and responsive

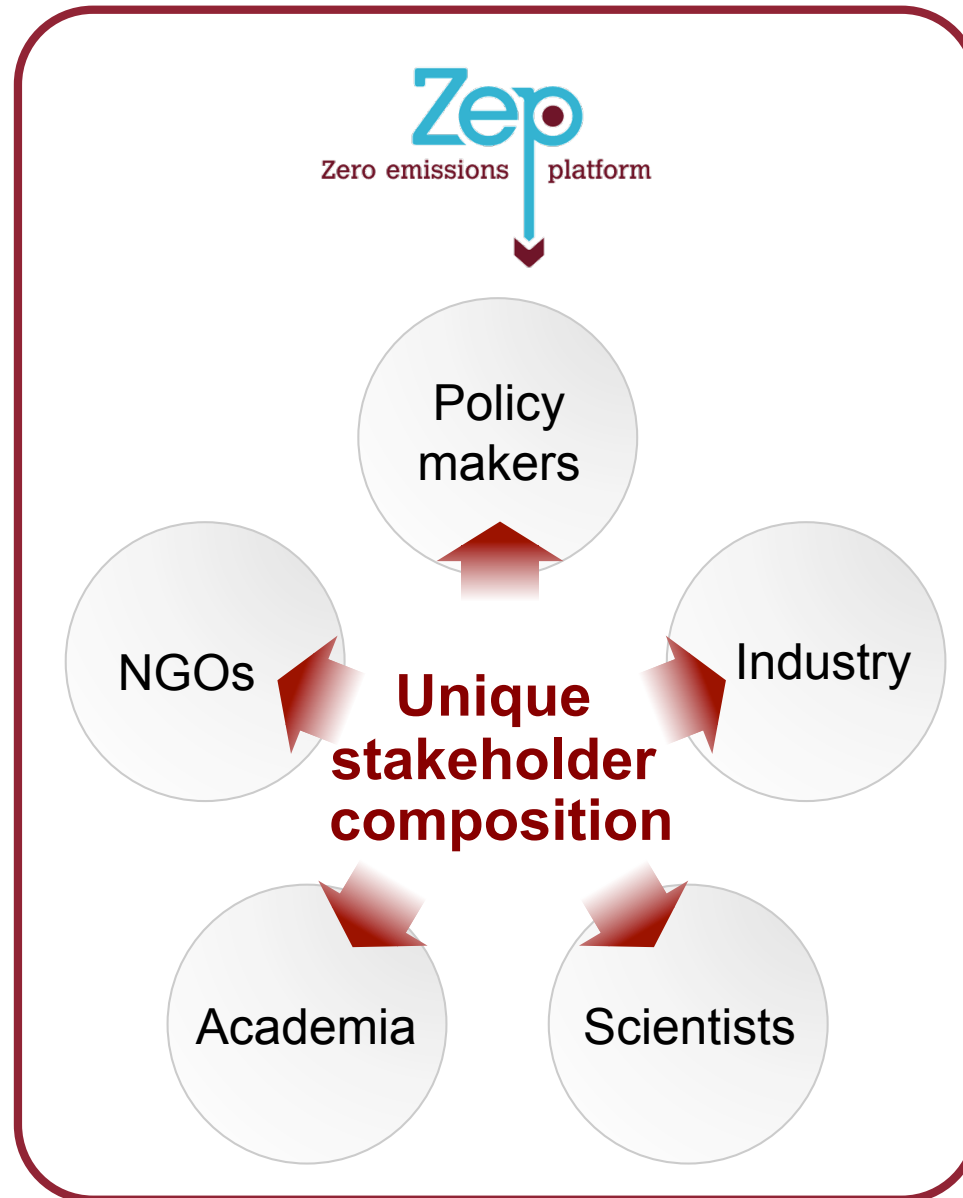


Tools, platforms & the real thing (projects)

**“Touch, see, feel” –  
making CCS a reality**




# ZEP: model for cooperation/collaboration



## Conclusions

EU first out of the gate.  
But first across the line...?

- 
- EU CCS legislation implemented nationally
  - Additional funding
  - Political and public support
  - International cooperation and collaboration critical to widespread deployment

**There is no second chance  
and time is running out...**



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