



# Update from the European Commission initiatives on Carbon Capture and Storage from the research and innovation perspective

*OCTAVIUS conference*  
*19 November 2015*

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# Political Context



## 2030 Climate-Energy Package

- 40% reduction of Greenhouse Gases
- 27% of renewable energy
- 27% improvement in energy efficiency

## Energy Union

- *Energy security, solidarity and trust*
- *A fully integrated internal energy market*
- *Energy efficiency first*
- *Transition to a low-carbon society*
- *An Energy Union for Research, Innovation and Competiveness*

## SET-Plan

- *Integrated Roadmap*



## Communication on the Integrated SET-Plan -COM[2015]6317

- CCS is defined as one of the 10 priority actions in the development of the overall Energy Union approach to research and innovation
- Enhanced efforts are necessary for implementation of large-scale CCS demonstration projects in both power and industrial sectors
- Research and innovation is needed to explore the feasibility of CCS on carbon and energy intensive industries
- CCU options, such as transforming CO<sub>2</sub> into fuels, chemicals and material, could further improve the economic case for CCS
- The Commission to work closely with Member States to develop and deliver these priority actions.





## ➤ **FP7 : ~220 M€ support to CCS and Clean Coal**

Areas covered include:

### **CO2 Storage:**

- Public acceptance, storage safety, site characterisation, monitoring and verification, site abandonment, remediation and mitigation, long-term fate of stored CO2
- CO2 storage pilot tests

### **CO2 Capture and transport:**

- Advanced capture techniques, new liquid solvents for post-combustion capture, scale-up of advanced capture processes, new generation capture processes

### **CO2 Transport infrastructure**

### **Impact of the quality of CO2 on transport and storage**



- Membership at: **IEA, CSLF, Global CCS Institute**
- Bilateral S&T cooperation:
  - **China** – NZEC project, Phase IIA under preparation,  
– Cooperation in H2020 under "CCS in industry"
  - **USA** – 11-13 May 2015, EU-US knowledge sharing event on  
Demonstration plants, 10th CO2GeoNet forum, Venice
  - **India** - EU-funded demo-gasifier OPTIMASH
  - **South Korea** – EU-Korea twinning workshop on CCS, 9  
Feb. 2015, Twinning cooperation on advanced CO2 capture  
in H2020: dry sorption, wet sorption and membranes
  - **Australia**
    - Twinning in FP7 2013 call on high efficiency capture  
processes - 6 on-going twinning projects
    - Cooperation CO2 storage foreseen in H2020, EU-AU  
Workshop on CCS in 2016



# Horizon 2020

*The EU Framework  
Programme for  
Research and Innovation  
2014-2020*

HORIZON 2020

Research and  
Innovation



# Call Low Carbon Energy : areas to be addressed in relation to Fossil Fuels

	AREA	TRL	TYPE
<b>Enabling the decarbonisation of the use of fossil fuels</b>			
LCE 15	Enabling decarbonisation of the fossil fuel-based power sector and energy intensive industry through CCS	4-5 > 6	RIA
LCE 16	Understanding, preventing and mitigating the potential environmental impacts and risks of shale gas exploration and extraction		RIA
LCE 17	Highly flexible and efficient fossil fuel power plants	3 > 4-6	RIA
<b>Supporting the development of a European Research Area in the field of Energy</b>			
LCE 18	Supporting Joint Actions on demonstration and validation of innovative energy solutions	5-6 > 6-7	ERA-NET
LCE 19	Supporting coordination of national R&D activities	2 > 5	CSA

# Calls 2014 Successful projects



## **CEMCAP**

CO<sub>2</sub> capture from cement production,  
EU Contribution 8.8 M€  
*Coordinator: SINTEF*

## **STEPWISE**

SEWGS Technology Platform for cost effective CO<sub>2</sub> reduction  
in the Iron and Steel Industry,  
EU Contribution: 12.97 M€  
*Coordinator : ECN*

## **GATEWAY**

Developing a Pilot Case aimed at establishing a European  
infrastructure project for CO<sub>2</sub> transport  
EU Contribution: 787,701 €  
*Coordinator: SINTEF*



# Calls 2015 Successful CCS proposals



- **LEILAC**  
"Low Emissions Intensity Lime and Cement"  
*Coordinator: CALIX (EUROPE) (UK)*
- **STEMM-CCS**  
"Strategies for Environmental Monitoring of Marine Carbon Capture and Storage"  
*Coordinator: NATURAL ENVIRONMENT RESEARCH COUNCIL (UK)*
- **ACT**  
"Accelerating CCS technologies as a new low-carbon energy vector", ERA-NET Co-fund,  
*Coordinator: The Research Council of Norway (NO)*



*Call Deadline: **16/02/2016***

## **LCE 24 (2016): International cooperation with South Korea on new generation high-efficiency capture processes.**

- Budget: EUR 17 million; deadline 16/02/2016

## **LCE 25 (2016): Utilisation of captured CO<sub>2</sub> as feedstock for the process industry**

- Expected EC contribution EUR 6-10 million per project
- Budget: EUR 10 million; deadline 16/02/2016



*Call Deadline :* **05/01/2017**

## **LCE 29 (2017): CCS in industry, including Bio-CCS**

- Piloting of CCS in industrial sectors other than power
- International cooperation is encouraged, in particular with China
- Expected EC contribution EUR 4-9 million per project

## **LCE 30 (2017): Geological storage pilots**

- International cooperation is encouraged, in particular with Australia and North America
- Expected EC contribution EUR 9-16 million per project

## **B3.2 (2017): Specific Grant Agreements for ERA-NET Co-fund actions**

- Demonstrate the full CCS cycle in a real-life operational environment, i.e. bring the technology to TRL7 or above (no specific deadline). Budget 20 M€ <sup>11</sup>



# HORIZON 2020

**Thank you  
for your attention!**

**Find out more:**  
[www.ec.europa/research/horizon2020](http://www.ec.europa/research/horizon2020)