

**Opening address**  
**2<sup>nd</sup> CO<sub>2</sub> Reuse Seminar**  
**21st October 2016 Lyon, France**



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## Club CO<sub>2</sub>, a French team for CCUS

- Information and initiative hub on carbon dioxide capture, transport, use and storage (CCUS), Club CO<sub>2</sub> brings together the French actors of the industrial sector and research concerned by CCUS.

- Main actions:

- Identification of guidance lines and challenges for R&D program
- Encouragement of collaborative projects between public and private researchers





## Club CO<sub>2</sub> initiatives

### Information

- Position paper : Explanation of the role of CCUS in France.
- Position paper: COP21 - Climate change and CO<sub>2</sub> management – A local solution for the short term, a global solution for the long term.
- Video (YouTube): CCUS – a solution for GHG reduction.
- Scientific meetings
  - EUROPEAN CCS DAY WORKSHOP in cooperation with Le Havre Development, CO2GEONET, GCCSI
  - CO<sub>2</sub> Reuse seminar (Le Havre 2015, Lyon 2016)

### Contribution to R&D support

- Club CO<sub>2</sub> Award for the best thesis of the year on CCUS. Price of 1500 € and Publishing support of the thesis report (1000 €)

### Working groups

- Dédicated to internal information
  - Communication WG
  - Impurities WG
  - CO<sub>2</sub> utilisation WG
  - Strategy WG



## Club CO<sub>2</sub> initiatives

### 3 main messages for the COP21

- **Synergies** must be developed and sustained between bioenergy, geothermal energy, renewable energy and CO<sub>2</sub> capture, use and storage
- Support to the **development of research projects** on breakthrough capture technologies will secure a leading position for French industry in the CO<sub>2</sub> capture domain
- A worldwide programme must be jointly defined or catalysed to produce an **assessment of capacities** and to conduct **full-scale, fully secure injection tests** in the most promising zones, particularly in deep saline aquifers.



## General setting

### If COP21 targets will become a reality

- **CCS and CCU** will have to demonstrate their efficiency to contribute to any decarbonisation scenario
  - Capture technologies need to be demonstrated and improved until becoming commercially competitive
  - CO<sub>2</sub> transportation networks need to be ascertained
  - **Industrial processes that use CO<sub>2</sub> as feedstock need to be deployed**
  - "CCUS chain" must be recognize as an alternative to CO<sub>2</sub> emissions mitigation.



## General setting

### **If COP21 targets will become a reality**

- **The IEA indicates, that to achieve the 2°C climate goal at least cost**
  - around 4,000 Mtpa of CO<sub>2</sub> per year needs to be captured and stored in 2040,
  - growing to around 6,000 Mtpa in 2050
- **CCU could be a valuable complement to geological storage**
  - potential contribution to avoid CO<sub>2</sub> emissions
    - **80Mtpa today (of which 50Mtpa for EOR)**
    - **180 Mtpa by 2020**
    - **a potential of 300 Mtpa**
    - **A potential of 1.500 Mtpa in a long term (CO<sub>2</sub> Forum, Lyon, Sept. 2014)**



## General setting

# What are the most promising technologies

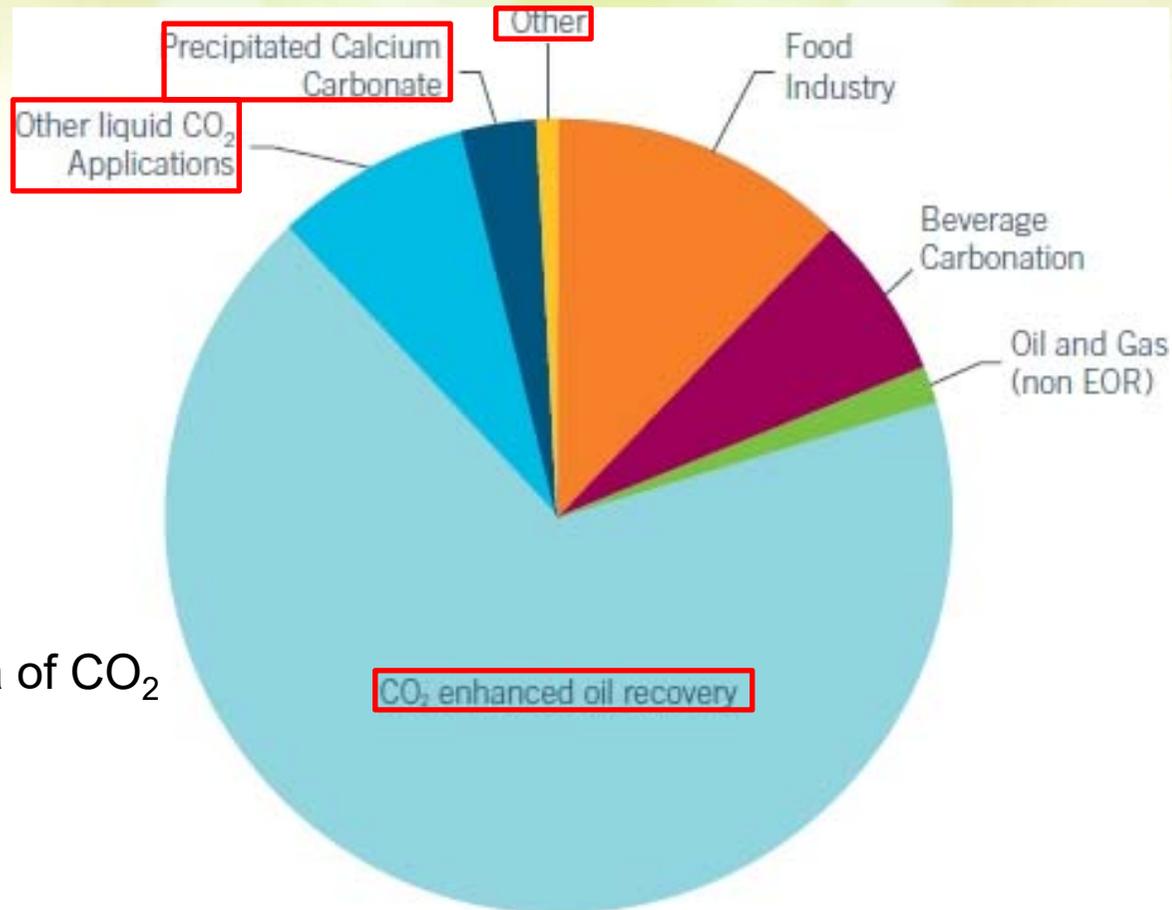
- **CO<sub>2</sub> enhanced oil recovery;**
- **CO<sub>2</sub> as a feedstock for urea yield boosting;**
- **Enhanced geothermal systems (using CO<sub>2</sub> as a working fluid);**
- **CO<sub>2</sub> as a feedstock in polymer processing;**
- **Algae production;**
- **Mineralisation (including carbonate mineralisation / concrete curing / bauxite residue carbonation);**
- **Liquid fuels (including renewable methanol / formic acid); and**
- **CO<sub>2</sub> enhanced coal bed methane (ECBM) recovery.**

From GCCSI <https://hub.globalccsinstitute.com/publications/accelerating-uptake-ccs-industrial-use-captured-carbon-dioxide/1-co2-reuse-technologies>



## General setting

# What are the most promising technologies



For 80 Mtpa of CO<sub>2</sub>

From GCCSI <https://hub.globalccsinstitute.com/publications/accelerating-uptake-ccs-industrial-use-captured-carbon-dioxide/1-co2-reuse-technologies>



## Conclusion

### Position of the Club CO<sub>2</sub> Association

➡ To fight successfully against climate change, Club CO<sub>2</sub> believes that actions must be taken simultaneously through simple projects for both the short and the long term.

➡ All solutions are needed: CCS and CCU

**We wish this seminar will bring a concrete contribution to the overall effort of the industry to mitigate the GHG emission, by demonstrating that CO<sub>2</sub> reuse could be a profitable solution and bring benefit to the Environment**