



CEM CCUS Workshop

# Korean Perspectives on CCS in Industrial Applications

January 30, 2013

Prof. Chonghun Han

Seoul National University and KCCSA



# CCS in Korea

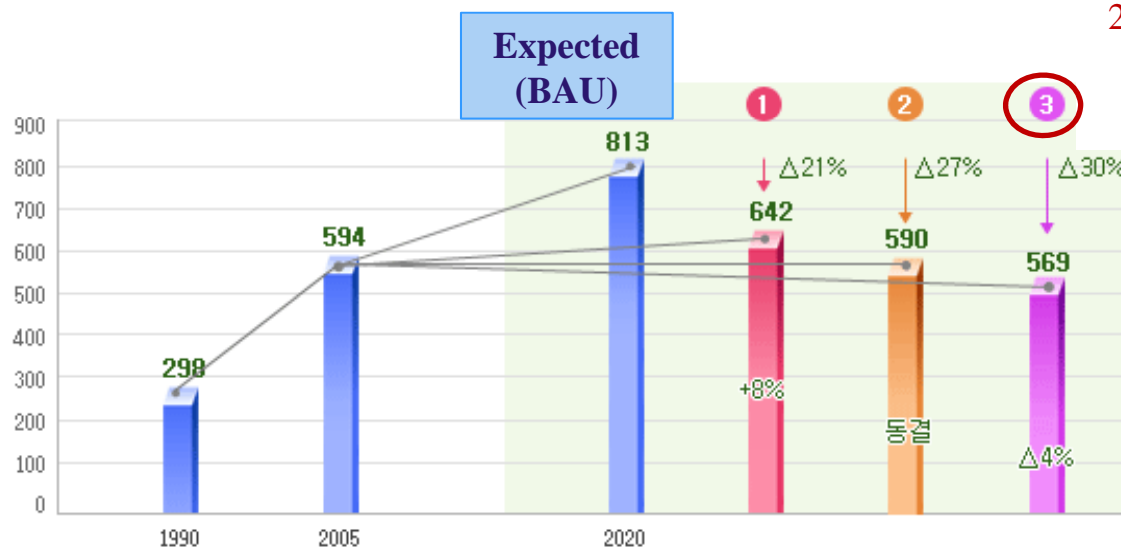
- South Korea : 8<sup>th</sup> Most GHG Emitting Country (2009)
- Target : BAU 30% Reduction of Emission at 2020 (Nov. 2009)

## Goals

- Completion of two 150MW Scale CCS Integration Projects by 2020
- Cumulative Revenue of \$100 Billion by 2030
- Additional 100,000 Employments by 2030

## Investment

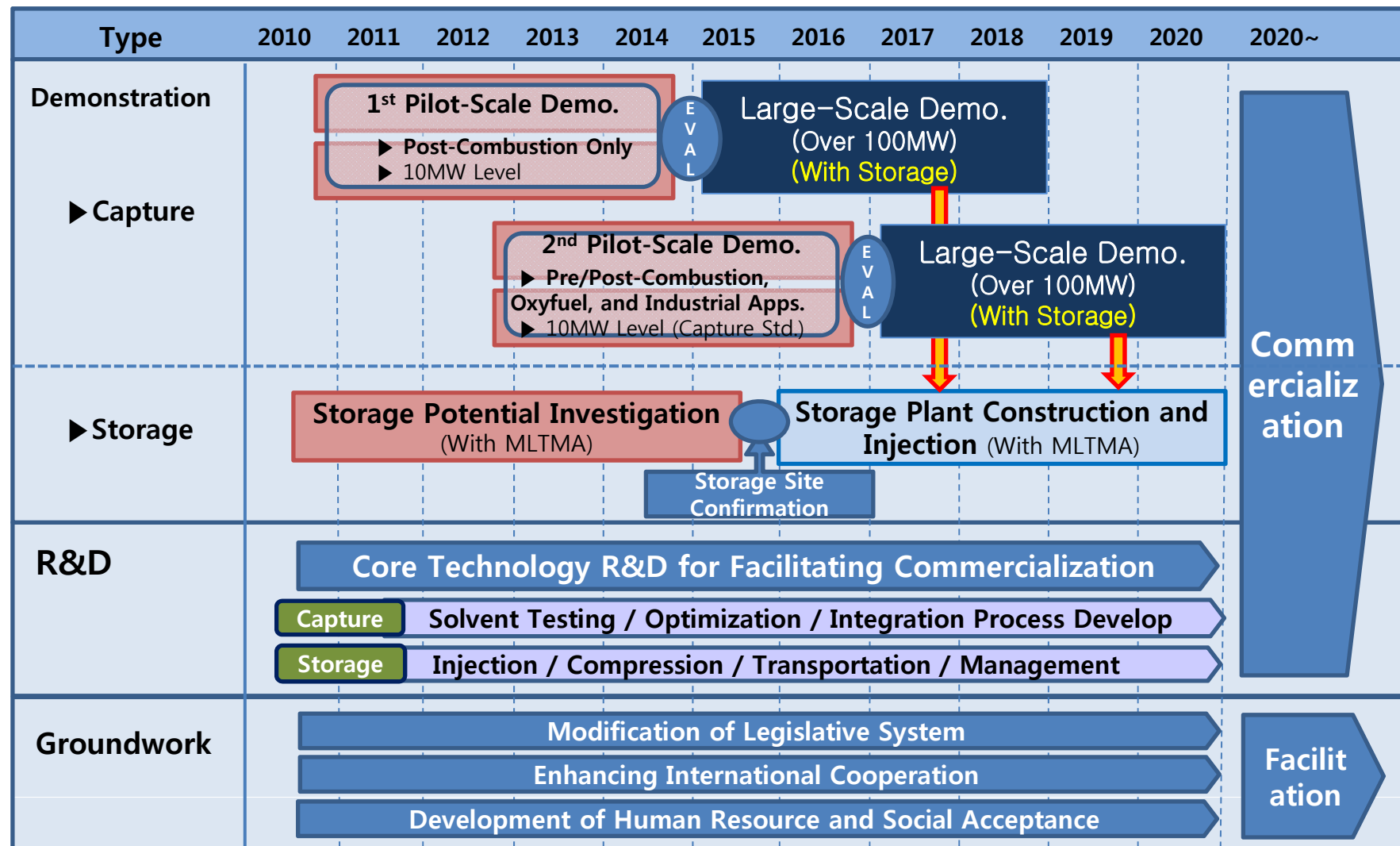
- By 2020: \$2 Billion Investment
- Government and Private Sector
- 84% for Demonstration Projects



2009.11 Cabinet Meeting:  
Scenario 3 (BAU 30%  
Reduction) Selected

# Korean National Roadmap for CCS (2009)

(to be updated in 2013)



# CO2 Capture Projects in Korea

## Post-combustion, wet solvent

10MW  
Boryeong  
(2011~2014)



## Post-combustion, dry sorbent

10MW  
Hadong  
(2011~2014)



## Oxy-fuel combustion

150MW  
dual slip  
stream  
Yeongdong  
(2010~2012)

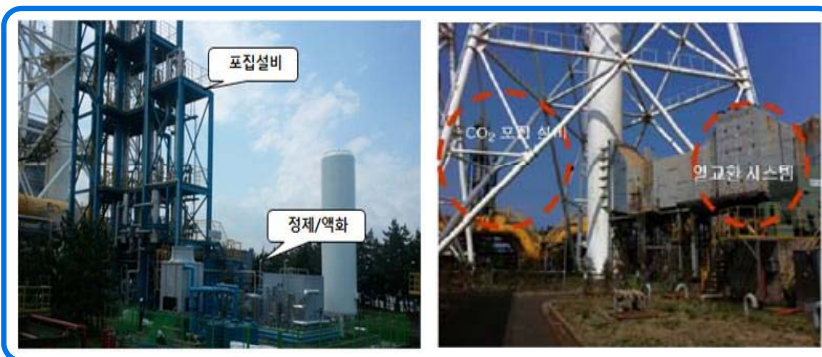


## Pre-combustion

5~10Mw  
( with 150Mw  
IGCC)  
Taeon  
(2011~2015)



# CCS: Industrial Applications in Korea



## CO2 capture in Steel industry (POSCO)

- 27 million(USD), 2009~2014
- Capture CO2 from blast furnace using ammonia liquid (10 ton/day, 0.5MW equiv)
- Purification/liquefaction process integrated with capture facility
- Production of liquid CO2 using the capture facility (3 ton/day)



## CO2 use using microalgae (Korea District Heating Co.)

- 11 million(USD), 2012~2017
- CO2 fixation through microalgae photosynthesis
- Conversion of CO2 using microalgae into high value-added products, such as astaxanthin
- Development of a culture process (1 t/day)



# Potential CO<sub>2</sub> Storage Sites

## On-shore Storage (1.8 billion ton est.)

1. Kyoungsang Basin  
680 million ton  
Priority Rank 1

2. Taebaek Basin  
180 million ton  
Priority Rank 2

3. Chungnam Basin  
4. Moonkyung Basin  
5. Honam Basin  
Priority Rank 3

## Off-shore Storage (10 billion ton est.)

Ulleung Basin  
(Dolgorae Gas field)  
Priority Rank 1

Pohang Basin  
Priority Rank 2

C: Chuju Basin  
D: Haenam Basin  
E: Kyukpo Basin  
F: Koonsan Basin  
Priority Rank 3

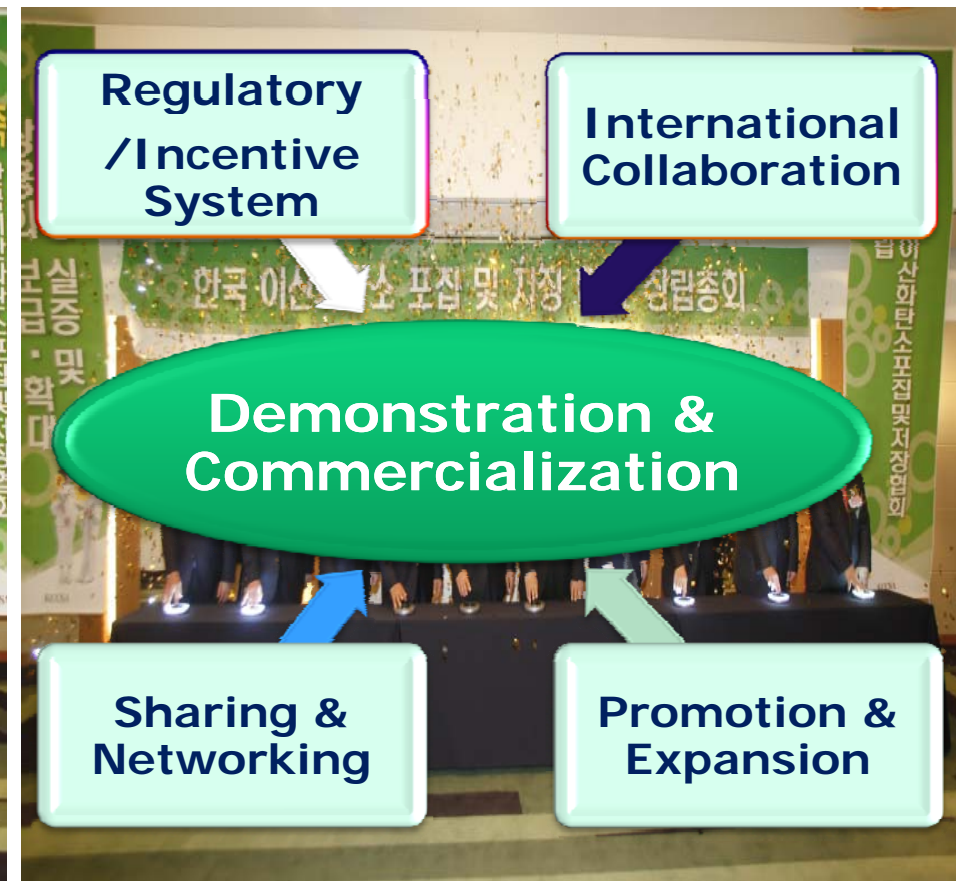


# Korea CCS Association (KCCSA)

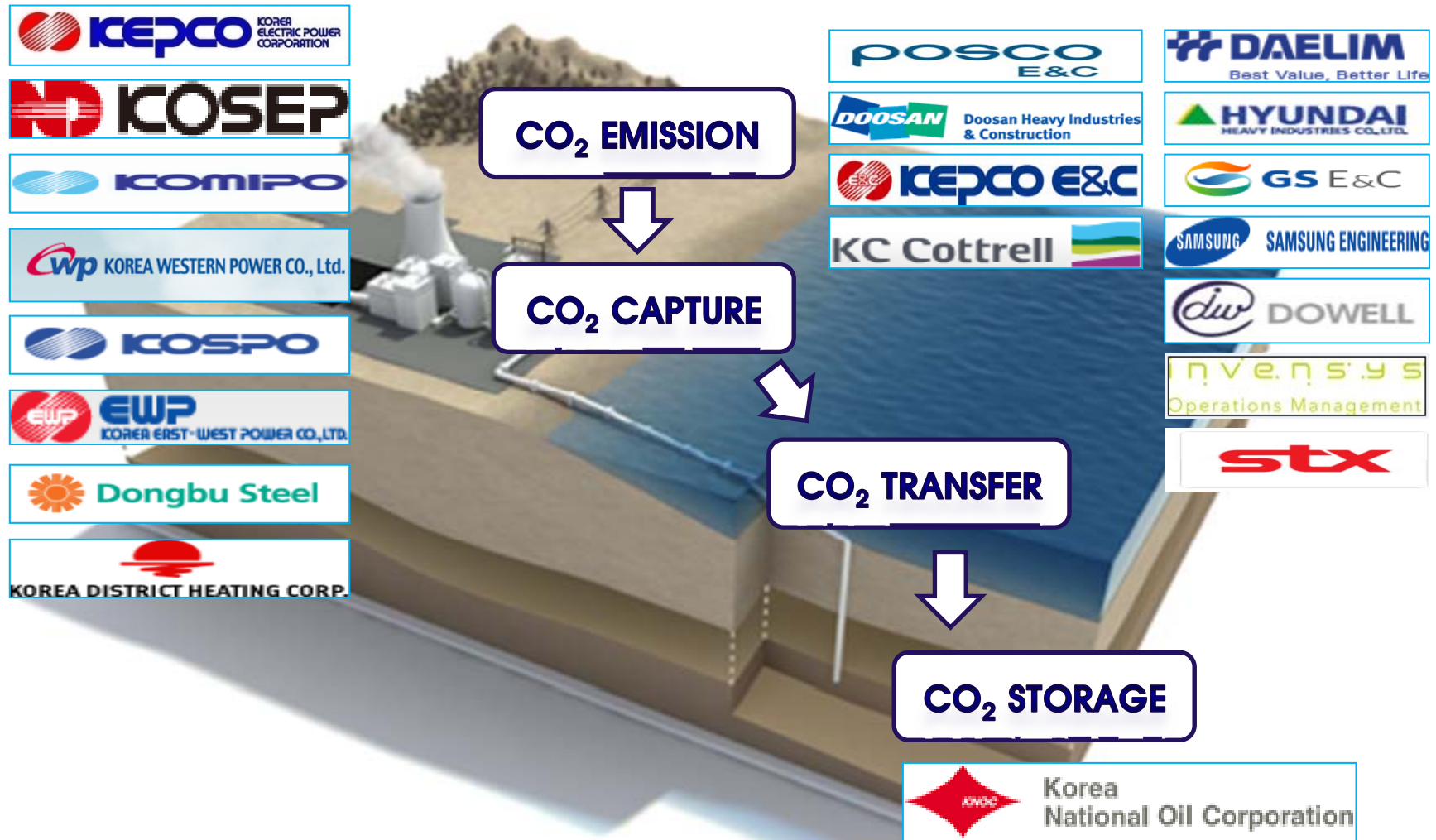
## National CCS Master Plan (2010. 7)



## Goal and Roles (KCCSA)



# Members of KCCSA: All Major Players in Korea



\* Newsletter recipients (bimonthly): 62,000