Country Report of EPPM (Korea)

2010. 11. 11

Dae -Gee Huh

KIGAM 한국지질자원연구원


Impact of EPPM Technical Activities
Enhancing Knowledge about GHG
Post EPPM Program Recommendation

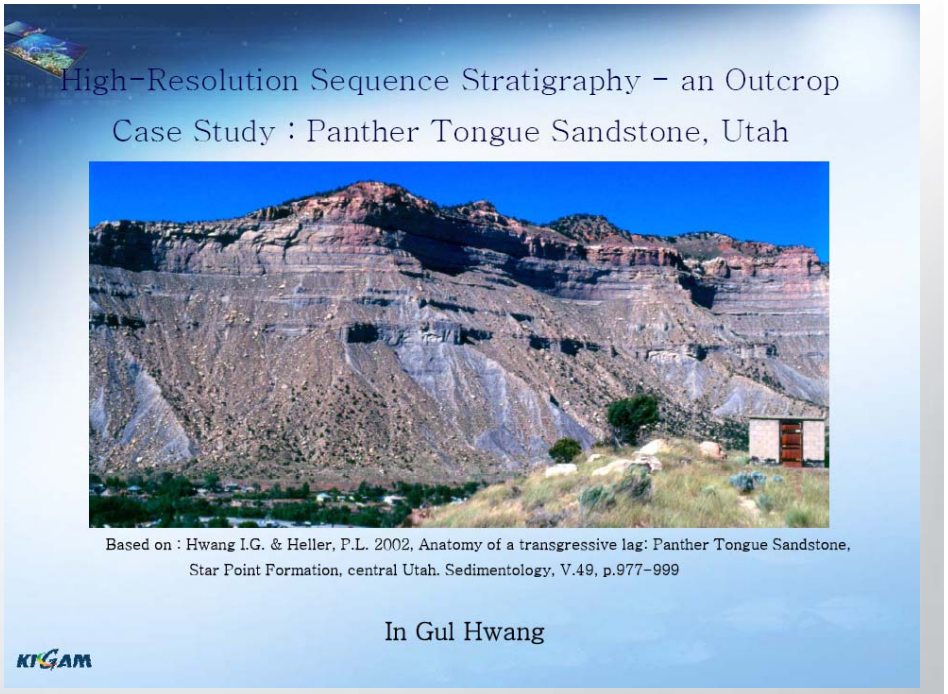
Impact of EPPM Technical Activities

Summary of activities participated

Field	Participants	Dates	Place
Petroleum Resource Management With Focus on Natural Gas (P1)	Hwang, I.G	Apr. 27-30 Aug. 2-5	Medan, Indonesia Langkawi, Malaysia
Natural Gas Field Development & Environmental Issue (P2)	Chun, JH	Dec. 8-11	Danang, Vietnam
	Park, Y.C. Yum, B.W.	June 29-July 1	Phuket, Thailand
	Lee, D.S. Kim, J.C. Han, R. H.	Sept. 28-Oct. 1	Bali, Indonesia
Meta-data on Natural Gas (P3)	Jang, S.H.	Mar. 24-26 July 20-22	Pattaya, Thailand Shanghai, China

Presentation of Case Study

By : Hwang In-Gul
Title: High-resolution Sequence Stratigraphy – an Outcrop Case Study: Panther Tongue Sandstone, Utah
Place : EPPM P1W3, Langkawi



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P2W3 Technical Sessions: Gas hydrates as potential energy

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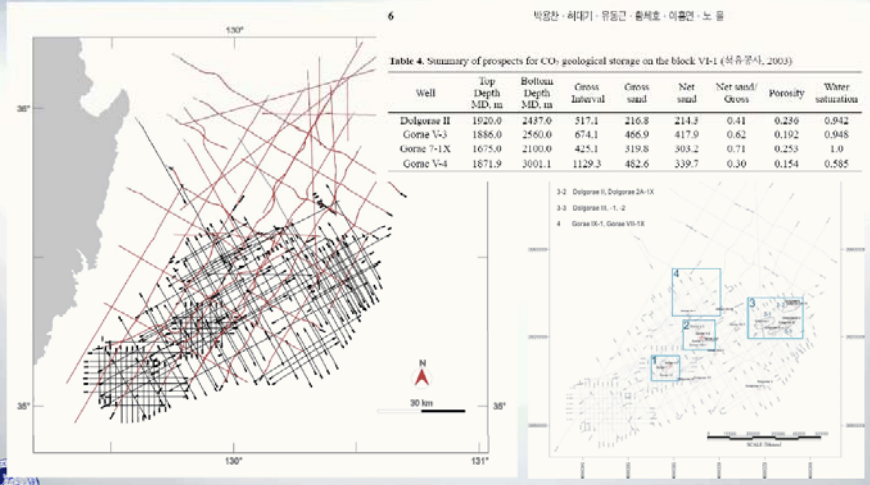
Status of CCS and its Barriers

Carbon Storage – Ulleung basin



6 박맹한 · 허대기 · 유동근 · 홍혁호 · 이홍면 · 노 을

Table 4. Summary of prospects for CO_2 geological storage on the block VI-1 (석유공사, 2003)

Well	Top Depth MD, m	Bottom Depth MD, m	Gross Interval	Gross sand	Net sand	Net sand/ Gross	Porosity	Water saturation
Dolgorae II	1920.0	2437.6	517.1	216.8	214.3	0.41	0.230	0.942
Gorae V-3	1886.0	2560.6	674.1	466.9	417.9	0.62	0.192	0.948
Gorae 7-1X	1675.0	2100.0	425.1	319.8	303.2	0.71	0.253	1.0
Gorae V-4	1871.9	3001.1	1129.3	482.6	339.7	0.30	0.154	0.585

Future of CCS in Korea

- Site specific assessment of geo-sequestration should be done
- Source-Sink linkage

- Possible Capture & Storage Link

(1) Steel/Iron works – Ulleung basin
(2) New power station – Ulleung basin
(3) Power station – Cheju basin
(4) Power station – Kunsan basin

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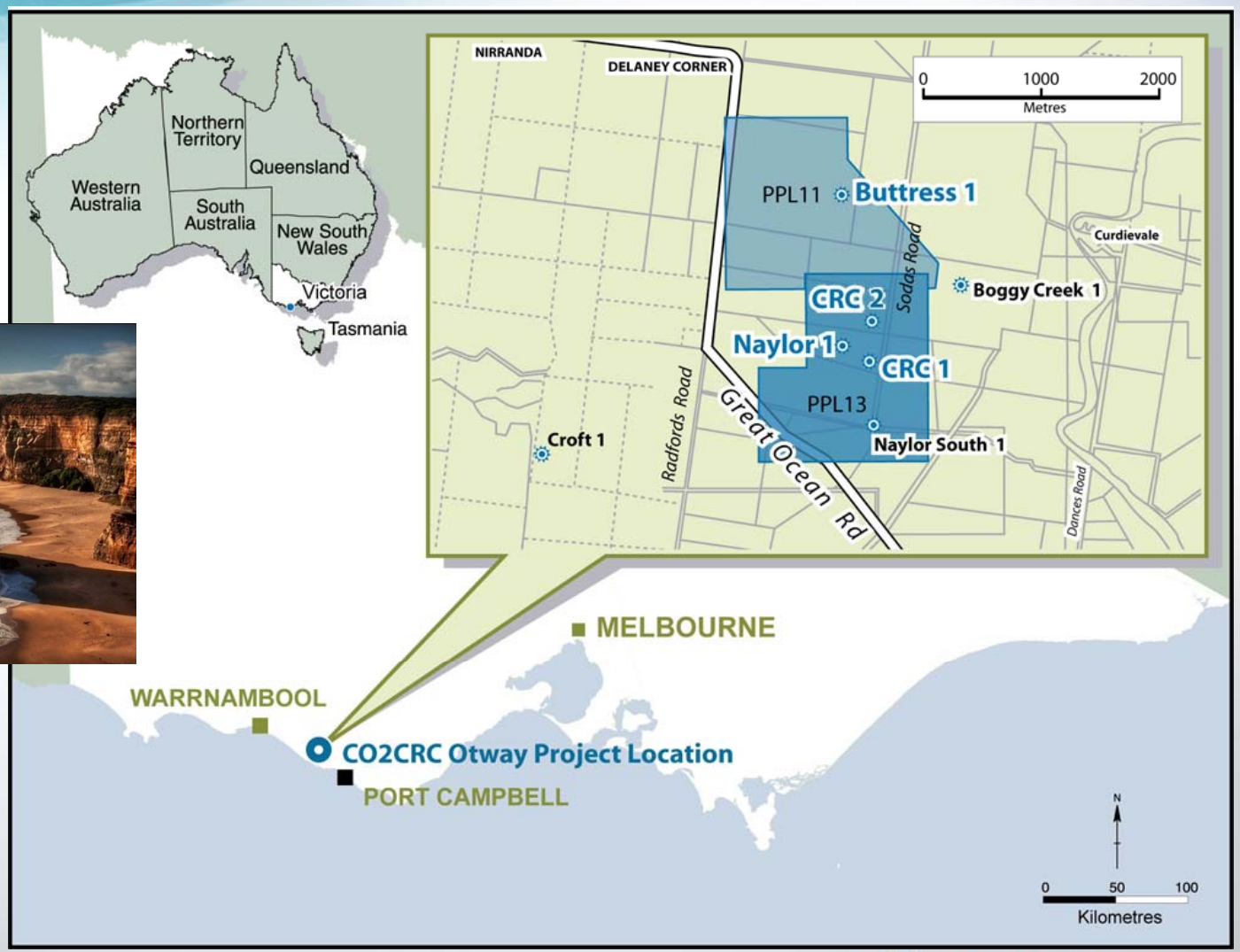
Otway Project in Australia



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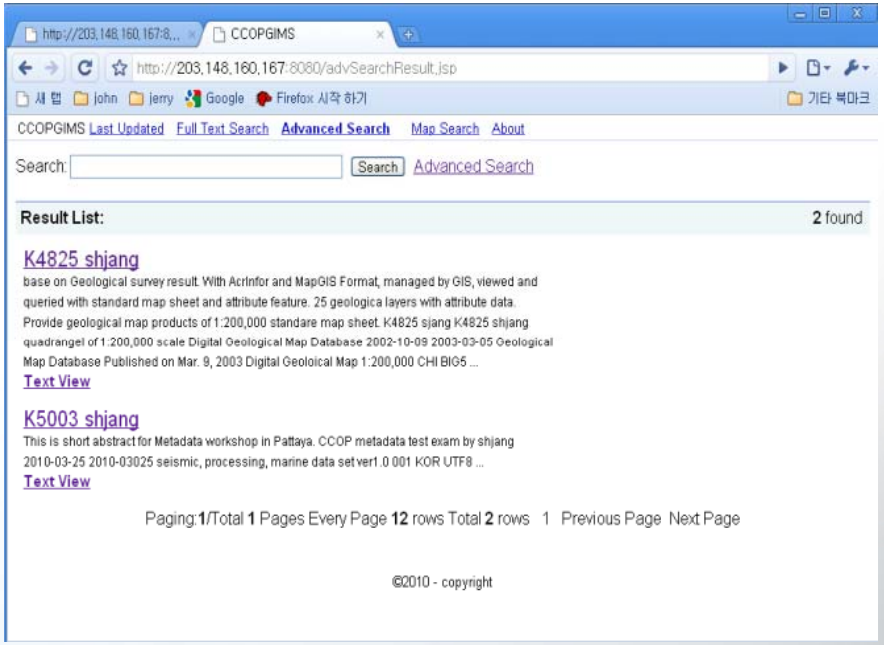
Meta-data Training

Metadata workshop activity



The published metadata example

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Lessons learned ,
Knowledge Sharing & Application

- Meta-data Training
  - Needs for standard geo-information data management.
  - Metadata system needs for support from multi-internet browser.
  - Application to seismic DB management system

- Application of basin analysis in Korean continental shelf areas
  - Ulleung Basin, Kunsan Basin

- CCS, Gas Hydrates
  - Cases of Sleipner and Snovit CO2 Storage Projects

- Knowledge Sharing
  - Reports, Seminars and Workshops

Recommendations to improve networking

- Active feedback on the metadata system
- Metadata sharing & Easy access metadata system
- CCOP as a conduit for technology sharing and scientific issues
- Collaborative studies on EPPM topics such as CCS, gas hydrates among CCOP member countries
- More technical experts from industry
- Joint research and exchange of researchers

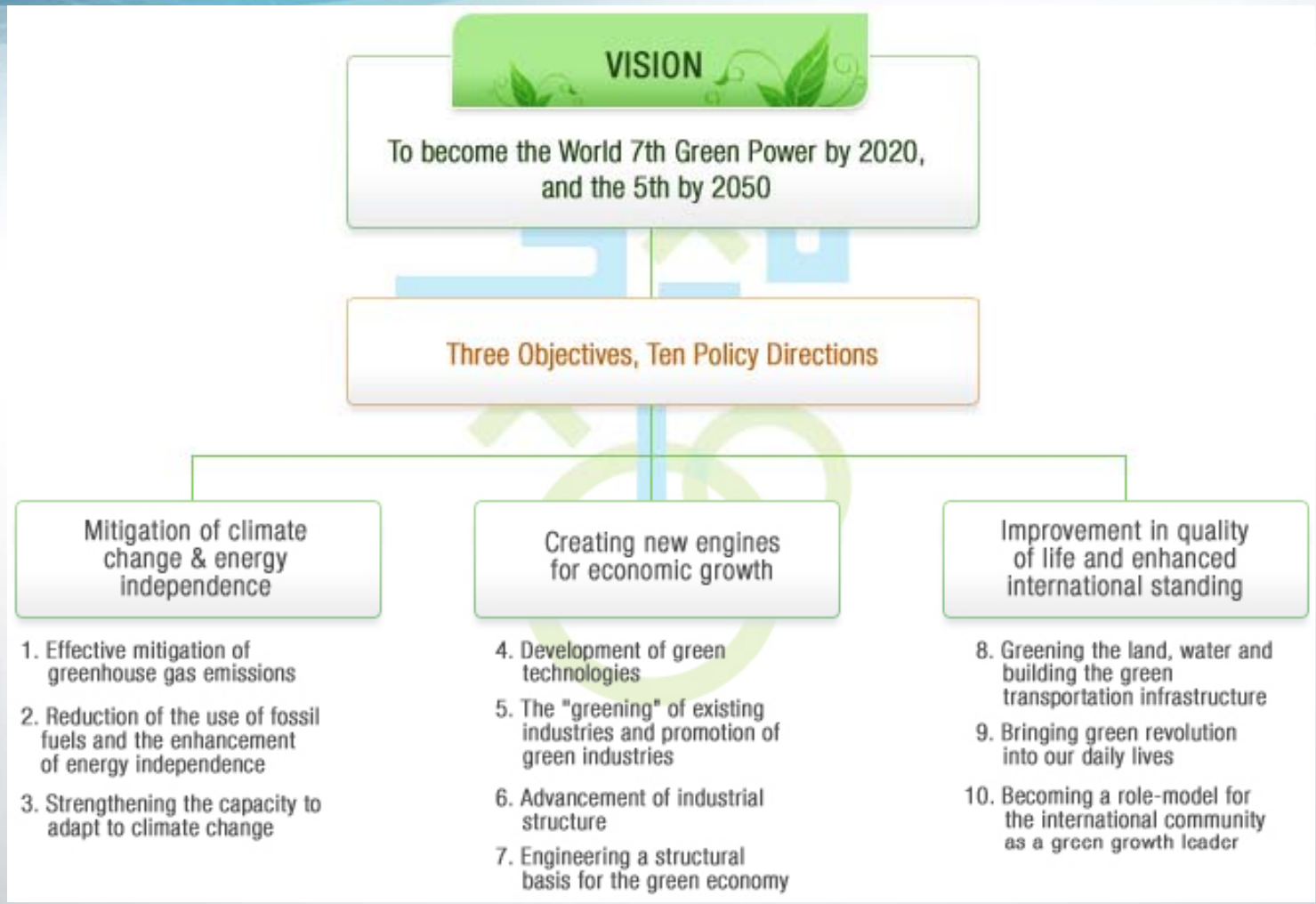
Enhancing Knowledge about GHG

National Program on Climate Change

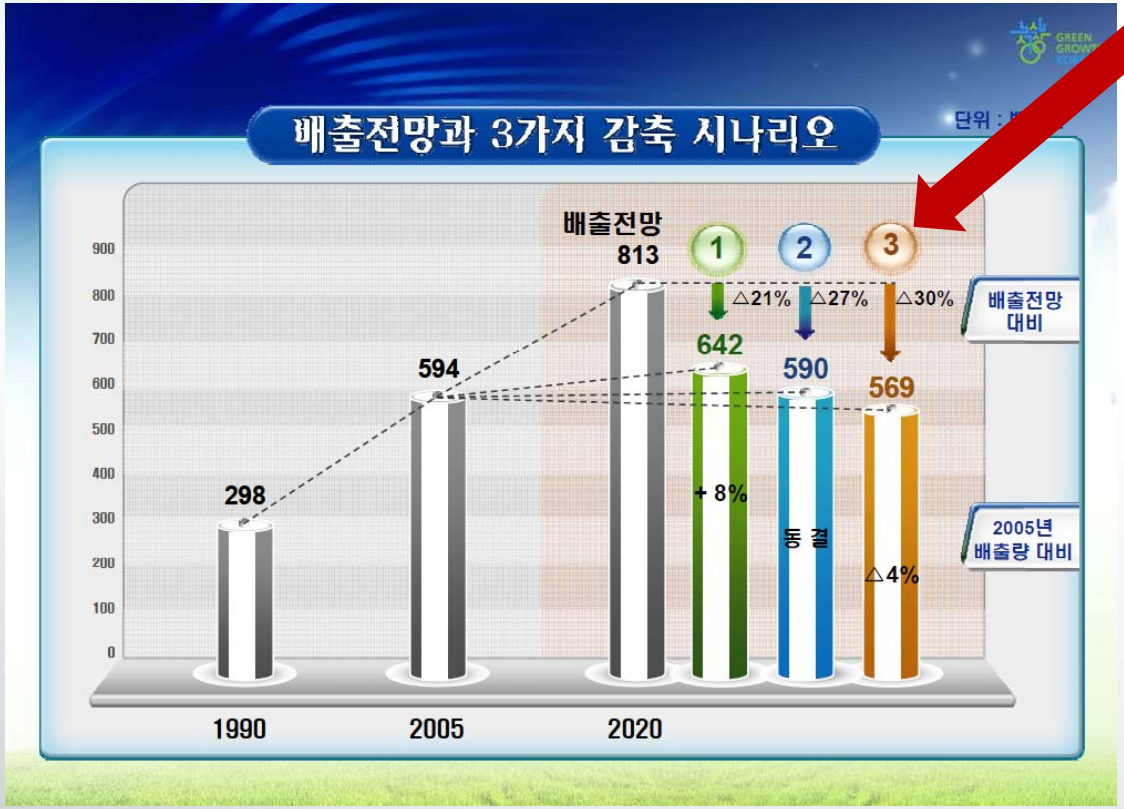
- Climate Change Center ; http://www.climatechangecenter.kr
  - education, research, campaign, business forum etc.
  - managing educational programs aimed at the governments, businesses, and citizens
  - supporting basic researches and holding conferences with regarding climate change
  - motivating citizens to tackle climate change
  - offering policy proposals for solving climate change problems
  - providing latest information and inter-sectional partnership

Presidential Committee on Greengrowth

www.greengrowth.go.kr



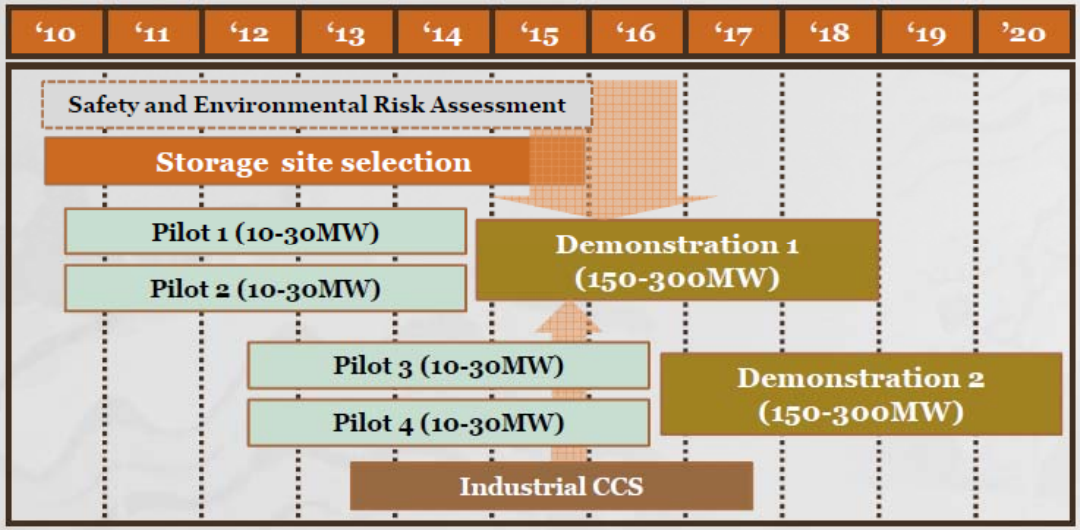
Presidential Committee on Greengrowth



2020 Reduction Target
- 4% cut in GHG emission by 2020
- 1~2 CCS project needed

Presidential Committee on Greengrowth

CCS Demonstration Plan



- **Pilot**: two sets of two10-30MW projects for competitive selection
- **Demonstration:** two 150-300MW projects selected through pilot projects feedback
- **Storage**: Ulleung Basin [sandstone reservoir (1.8-2.6 km depth, shale caprock)]
  - Gorae V: 0.15Gt CO2 potential storage capacity

▶ **Budget** (estimated)

	Pilot	Demonstration	Storage	Total
Government	$80 million	$192 million	$570 million	$842 million
Private Sector	$80 million	$767 million	$380 million	$1,227 million

* Private sector: KEPCO, KNOC, KOGAS, etc.

Presidential Committee on Greengrowth

Proposal

- The 9th largest emitter of GHG, Korea announced an ambitious GHG mitigation commitment and is striving to achieve the goal with a set of technology options including CCS among others.
- Inclusion of a Korean CCS project in the “20 by 20” or “20+ by 20” will greatly encourage us to further our efforts to accelerate the deployment of one of the most important technology options for a greener world.
- Therefore, we request the international community to consider our proposal in a positive light. Your cooperation will be greatly appreciated.

Project Name	District, Country	Estimated Operation Date	Capture Facility	Capture Type	Transport Type	Storage Type	Storage Rates
KOR-CCS1	Samcheok/ Boryeong, Korea	2016	300-500MW coal-fired power plant	Post-combustion	Pipeline /Ship	Sandstone /saline aquifer/ depleted gas field	1Mtpa
KOR-CCS2	Youngdong/ Taean, Korea	2018	300MW coal-fired power plant or 300MW IGCC plant	Pre- or Oxy-fuel combustion	Pipeline /Ship	Sandstone /saline aquifer/ depleted gas field	1Mtpa

* With due respect to early movers, we propose the number of the selected projects be increased to include as many projects as we agree to be sufficiently qualifying. This, we believe, will better promote the goal of "20 by 20" intiative, that is, to accelerate the deployment of CCS worldwide.

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- **Basic Research**
  - CO2-Water Relative Permeability Tests
  - Seismic Wave and Specific Resistance Tests
  - Simulation using Own or Commercial Models

교육과학기술부
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

- **Site Screening for Geological Sequestration**
  - Assessment of CO2 geological storage potential
  - Review feasibility of CCS project in Korea

MLTM
Ministry of Land, Transport and Maritime Affairs

KNOC 한국석유공사
Korea National Oil Corporation

- **International Collaborative Study**
  - Participation in the Otway Pilot Project of CO2CRC
  - Joint Workshop with AIST/GSJ

MKE 지식경제부
Ministry of Knowledge Economy

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Post EPPM Program Recommendation

Capacity Building Needs

- National regulatory framework for CCS
  - We need a demonstration project for CO2 storage of 1 million tons/yr by 2015
- Data Management System (metadata)

Assistance from CCOP

- Continuation of EPPM project for more technology transfer from cooperating countries


Thank for your
attentions