



# Minutes of IGU PGC-A SG-1 meeting in Yamburg



February 5th, 2015  
Ichiro Fukuda  
Tokyo Gas Co., Ltd.

# Attendees

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Gro (Statoil)  
Dominique (TOTAL)  
Thiru (Petronas)  
Zamani (NIGC)  
Ichiro (Tokyo Gas)





# Agenda for our group meeting

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1. Two CCS sessions in WGC2015
  - Chair(s) of both sessions
  - Presenter of our group report
  - Program, order of presentations
  - Use WISEMBLY or not
  - Selection of moderator(s) for both sessions
2. CCS Group Report Progress
  - Overall progress of the report
  - Discussion about chapter 8 (conclusion)
  - Outline of Chapter 1 (Introduction)
  - Proofreading and editing
  - Schedule



## **Thematic session** on WGC2015 (*agenda*)

Invaides, 17:00-18:30, Tue 2nd June, 2015

Room capacity: 350

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- Ichiro will chair the session
- (10min.) Presentation by group leader to briefly introduce our CCS group report
- (10min. X 6people) Selected paper presentation
- (20min.) Discussion incl. Q&A
- 90 minutes in total



## **Thematic session on WGC2015**

### ***Key decisions***

- 6 presentations will be made in series and Q&A session will start after all the presentations.
- We will use WISEMBLY (Hazleen, Gro, Thiru, Florent (TOTAL) and Zamani are candidate of a moderator)
- The order of presentations are
  - 2. Capturing the future of natural gas (Norway)
  - 7. CCS development and gas versus coal competition for power generation (France)
  - 6. Sustaining natural gas usage with CCUS technologies (USA)
  - 1. The Peterhead CCS project (Netherlands)
  - 4. Improving social acceptance – Case study of Peterhead (UK)
  - 3. GHG emission reductions by re-injection and re-use of CO<sub>2</sub> (Qatar)



## **Interactive showcase** on WGC2015 (Program)

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- *Six speakers including Q & A*
- *45 minutes in total*
- *5 minutes presentation and 2 minutes for Q&A*



## **Interactive showcase** on WGC2015

### ***Key Decisions***

- We will NOT use WISEMBLY in this session
- We will receive short two questions after each presentation
- The order of presentations are
  - 10. Membrane technology to separate CO<sub>2</sub> in natural gas refineries (Iran)
  - 5. DNV launched updated certification framework for CO<sub>2</sub> storage (Norway)
  - 9. Methodology for calculating the long term liability of CO<sub>2</sub> storage sites (Norway)
  - 11. FS of CO<sub>2</sub> injection for enhanced shale gas recovery in China (Malaysia)
  - 12. Lacq fully integrated CCS industrial pilot (France)
  - 8. Fire in ice – using CCU in gas hydrates (India)

# Result of paper selection for our sessions

Rank	Title	Country	Recommendation
1	THE PETERHEAD GAS CCS PROJECT – DRIVERS AND DEVELOPMENT	Netherlands	Oral
2	CAPTURING THE FUTURE OF NATURAL GAS	Norway	Oral
3	GREENHOUSE GAS EMISSIONS REDUCTION BY RE-INJECTION AND RE-USE OF CO2 FROM SULFUR RECOVERY UNITS AT RASGAS	Qatar	Oral
4	IMPROVING SOCIAL ACCEPTANCE THROUGH EARLY INTERACTION AND AWARENESS-RAISING IN LOCAL COMMUNITIES: A CASE STUDY OF THE PETERHEAD CCS PROJECT.	UK	Oral
5	DNV GL LAUNCH UPDATED CERTIFICATION FRAMEWORK FOR CO2 STORAGE	Norway	Showcase
6	SUSTAINING NATURAL GAS USAGE WITH CCUS TECHNOLOGY--CHALLENGES AND OPPORTUNITIES  WITH EVOLUTION TO A CARBON-CONSTRAINED ENERGY INFRASTRUCTURE	USA	Oral
7	CCS DEVELOPMENT AND GAS VERSUS COAL COMPETITION FOR POWER GENERATION	France	Oral
8	FIRE IN ICE: FUELLING THE FUTURE USING CARBON CAPTURE AND UTILIZATION IN GAS HYDRATES	India	Showcase
9	A QUANTITATIVE METHODOLOGY FOR CALCULATING THE LONG-TERM LIABILITY OF CO2 STORAGE SITES	Norway	Showcase
10	A NEW ALTERNATIVE METHOD BASED ON MEMBRANE TECHNOLOGY TO SEPARATE CO2 IN NATURAL GAS REFINERIES	Iran	Showcase
11	FEASIBILITY STUDY OF CO2 INJECTION FOR ENHANCED SHALE GAS RECOVERY IN CHINA	Malaysia	Showcase
12	LACQ FULLY INTEGRATED CCS INDUSTRIAL PILOT : LESSONS LEARNT	France	Showcase

Yellow: Thematic session, Light blue: Interactive showcase



## 2. CCS group report

- Previous table of contents agreed in Helsinki -

1. About this report <Tokyo Gas>
2. Why CCS is important for a sustainable gas industry?  
<Tokyo Gas>
3. Status of CCS around the world <Tokyo Gas>
4. *Technical aspects , MMV* <Sonatrach>
5. *Legal issues* <Petronas>
6. *Social issues* <Petronas>
7. *Perspectives in the CO2 utilization* <PTT>
8. *Conclusion* <Total>

## 2. CCS group report

### - NEW table of contents -

1. About this report <Tokyo Gas>
2. Why CCS is important for a sustainable gas industry?  
<Tokyo Gas>
3. Status of CCS around the world <Tokyo Gas>
- ~~4. *Technical aspects , MMV <Sonatrach>*~~
4. Legal issues<Petronas>
5. Social issues<Petronas>
6. Perspectives in the CO2 utilization <PTT>
7. Conclusion<Total>

*Annex (related to the chapter of legal issues)*

*· Technical aspects , MMV <Sonatrach>*

## 2. CCS group report

- The reason for the removal of MMV to Annex-

- This chapter doesn't fit the narrative line of whole the report
- The other technology for CCS which has been progressed recently (capture, transportation, storage, EOR, etc) were not covered. This could lead to the impression of incompleteness of our report and we have made light of other technological fields.
- There is deep connection between legal aspects of CCS and MMV.

## 2. CCS group report

- Outline of chapter 8 (to be discussed) -

- Main points are...
  - CCS need to compete with renewables and coal with CCS
  - We need to develop high CO<sub>2</sub> content gas field and we need to introduce CCS to such gas fields to better manage industrial reputation and to be in line with the industry's sustainable development.
  - Gas industry has advantageous position for CCS as
    - (1) gas industry has experiences in geoscience for CO<sub>2</sub> storage in deep saline aquifer or depleted gas and oil field
    - (2) has experience in transporting gas by pipeline or ship as well as possible transformation from gas to CO<sub>2</sub> transportation infrastructure.



## 2. CCS group report

### - Outline of chapter 8 (to be discussed) -

- We require more demonstration projects in upstream, gas processing plants, LNG plant and even more on gas PP by providing more incentives or more conducive and robust legal and regulatory framework of CCS.
- Even oil and gas-rich countries need to implement CCS to construct portfolio along with improvement of energy efficiency, renewables etc in the future carbon constraint society
- We require social acceptance for gas (plus CCS)
  - Accepting gas as a part of solutions in mitigating climate change (lower CO<sub>2</sub> emissions than coal, more flexible than renewables)
  - CCS with gas technology to prove the risk of leakage is properly managed to do sound and economical MMV technologies

## 2. CCS group report

### - Outline of chapter 1 (to be discussed) -

- About SG-1 in PGCA (introduction of members, history, etc)
- About this report (2<sup>nd</sup> CCS report)
- CCS development has been slower than we anticipated three years ago
- However, to achieve the goal of climate mitigation, CCS with gas is essential.
- In this report we will introduce recent development of CCS from many points of view (legal, social, status of the current and future projects, etc) and will present our view towards sustainable development of gas industry with CCS.
- Blah blah blah...

## 2. CCS group report

- Schedule (to be discussed) -

- 16th February: complete all the second draft by reflecting comments from SG-1 members.
- 16th February: complete the draft of Chapter 1 (Introduction) by Ichiro.
- 20th February: All SG-1 members read through whole chapters and make comments (if any)
- 27th February: complete each chapter
- 6th March: apply our report to IGU report template and editing by Ichiro
- 12th March: I receive comments from professional native proofreader.
- 16th March: Complete the report and submit to IGU secretariat



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Look forward to seeing you in Paris!