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MASDAR INSTITUTE

## Economic and Social Commission for Western Asia (ESCWA)

Expert Group Meeting on “Carbon Capture, Utilization and Storage  
in ESCWA Member States: Enhancing the Sustainability of the Energy  
System in a Carbon Constrained Development Context”

6-7 November 2013

Masdar Institute – Abu-Dhabi, United Arab Emirates

## AGENDA

### DAY 1: WEDNESDAY, 6 NOVEMBER 2013

**08:30 – 09:00**      **REGISTRATION**

**09:00 – 10:00**      **OPENING AND KEYNOTE ADDRESSES**

- *Mr. Fred Moavenzadeh (President, Masdar Institute of Science and Technology)*
- *Ms. Roula Majdalani (Director, Sustainable Development and Productivity Division (SDPD), ESCWA)*
- *Mr. Abdul Munim Saif Al Kindy CEO, Abu Dhabi Company for Onshore Oil Operations)*
- *Global Status of CCUS: Mr. John Gale (General Manager, IEA Greenhouse gas R&D Programme)*

**09:30 – 10:20**      **Coffee Break**

**10:20 – 11:50**      **SESSION 1: CARBON CAPTURE, UTILIZATION AND STORAGE (CCUS) AND ENHANCED HYDROCARBON RECOVERY (EHR) – POLICIES AND TRENDS IN THE REGION.**

The oil producing countries in the region have increased interest in CCUS and are actively promoting its adoption in regional and international forums. There are vested interests in the technology linking it directly to EOR while stressing its role in mitigating climate change.

The CCUS policies in these countries are geared toward incentivizing investment in the technology in large part to boost hydrocarbon production in mature fields. However, as more evidence link anthropogenic atmospheric CO<sub>2</sub> emission to climate change, a stronger consensus might be on the horizon pushing for global action on GHG emission reduction.

- ✓ What actions should the countries in the region take in anticipation for such outcome?
- ✓ How does EOR fit with the CO<sub>2</sub> mitigation strategy?
- ✓ How best non-hydrocarbon producers prepare for this eventuality?
- ✓ Can there be a symbiosis in this area between hydrocarbon producers and non-producers?

- *Moderator: Mr. Mohamed Sassi (Masdar Institute)*

- Principal presenter: Mr. Habib El Andaloussi(ESCWA, Chief, SDPD/ Energy Section)
- Mr. Arafat Al Yafei (ADNOC, Manager, CO<sub>2</sub>/N<sub>2</sub> Development)
- Mr. Robin Mills (Manaar Energy Consulting, author of “The Myth of the Oil Crisis” and “Capturing Carbon”; energy strategist and economist)
- Mr. Wolf Heidug (IEA, Senior Analyst, CCS Unit)

**11:50 – 12:05      Short Coffee Break**

**12:05 – 13:55      SESSION 2: CO<sub>2</sub> CAPTURE TECHNOLOGIES / CCUS INFRASTRUCTURE / LARGE-SCALE CCUS PROJECTS IN THE REGION.**

The implementation of CCUS requires medium to long term investment along a strategic roadmap with clear objectives and targets. There are different technologies for carbon capture which are adequate for different applications. In the ESCWA region the largest emission source resides in the electricity and water desalination sectors which rely heavily on oil and gas for heat generation.

- ✓ What would be the most suitable capture technologies which would be integrated in new power plants? Retrofitting technologies in existing plants?
- ✓ What are the industries in the region which can be candidates for carbon capture?
- ✓ What is the estimated carbon capture potential for the region now and in the future? And what are the major CCUS related projects currently implemented or planned for deployment in the region?
- ✓ Linking carbon source to sink requires transport infrastructure. What is the need for onshore/offshore transport?

• ***Moderator: Mr. Mohammad Abu Zahra***

- Principal presenter: Mr. Mohammad Abu Zahra (Masdar Institute)
- Mr. Paul Crooks (Masdar Clean Energy, Project Manager)
- Earl Goether (Principal Scientist, Gas Treatment, Dutch Research institute TNO)
- Mr. Gernot Schneider (CCS Director, Sales and Marketing, Siemens)

**13:55 – 15:00      Lunch break**

**15:00 – 17:00      SESSION 3: GEOLOGICAL CO<sub>2</sub> STORAGE POTENTIAL IN THE REGION.**

CCUS coupled with HER sees the CO<sub>2</sub> injected and stored in mature hydrocarbon fields. The integrity of the fields is proven and carries minimal risks of CO<sub>2</sub> escape. Based on the quantity of oil and gas extracted the capacity for storing CO<sub>2</sub> in the existing fields is more than adequate for the hydrocarbon producing countries and for many years to come.

- ✓ What is the situation with countries non-producers of hydrocarbon in the region? How extensively is the geology of the region mapped?
- ✓ Where do existing geological formations located?
- ✓ What are the best links between carbon sources and sinks in different countries of the region? Do they involve cross-border transport?

• ***Moderator: Said Nachet (IFP School, Associate Professor/Former Energy Director at IEF)***

- Principal presenter: Mr. Andrea Moscariello (University of Geneva, Professor of Geology.)
- Mr. Iain Macdonald (Imperial College/QCCSRC Programme Manager)
- Mr. Yann Le Gallo (Geogreen, Operation Manager)
- Stephen Cawley (Resource & Projects Manager (EUR/RoW), Carbon Solutions Team, BP Alternative Energy Int.)

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**DAY 2: THURSDAY, 7 NOVEMBER 2013**

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**09:00 – 10:50      SESSION 4: STATUS OF R&D IN CCUS IN THE REGION AND OPPORTUNITIES FOR CCS AS AN EMERGING SECTOR.**

Several GCC countries have established R&D programmes in CCUS doing research in various aspects of carbon capture. In addition several pilot projects either as new plant construction with carbon capture mechanisms or retrofitting existing power and industrial plants with carbon capture processes are under construction or projected within the next few years.

- ✓ Are the activities we are witnessing based on a strategic plan with clear objective and targets or are we still at the ad hoc stage?
- ✓ What would be needed in terms of capacity building to strengthen a burgeoning CCUS industry?
- ✓ How are the different institutions collaborating in the area of CCUS and how this collaboration could be improved to result in large scale cross-border projects?

• **Moderator: Mr. Toufic Mezher (Masdar Institute)**

- Principal presenter: Ms. Jessica Morton (Global CCS Institute, Development Adviser)
- Mr. Iain Macdonald (Imperial College/QCCSRC Programme Manager)
- Mr. Sa'ad El Jandal (KISR, The Energy Group)
- Mr. Mohammad Abu Zahra (Masdar Institute, Professor)

**10:50 – 11:10      Coffee Break**

**11:10 – 13:00      SESSION 5: CCUS LEGAL AND REGULATORY FRAMEWORKS IN THE REGION: CO<sub>2</sub> OVERSIGHT/MONITORING, MEASUREMENT AND VERIFICATION.**

There are various CCUS issues that need to be regulated in order to remove any ambiguity from the permitting requirements and contractual agreements and to reduce the risks and liabilities transpiring from CCUS operations. The capture and transport segments of CCUS can be regulated as ordinary industrial activities. Most of the issues fall within the geological storage segment and present a challenge to regulatory entities.

- ✓ Are there any existing provisions in the region to ensure safe and reliable CO<sub>2</sub> storage?
- ✓ What should be the role and responsibility of the public authorities during the various stages of CO<sub>2</sub> storage, i.e. exploration, injection and pre-closure, and finally post-closure?
- ✓ Where does the liability of the storage operators end and where does that of the state begin?
- ✓ What provisions should there be for storage reservoirs crossing borders?

- ✓ What is the role of the public and their acceptance in regulating and accelerating the deployment of the CCUS?

- ***Moderator: Mr. Wolf Heidug (IEA, Senior Analyst, CCS Unit)***
  - Principal presenter: Mr. I-Tsung Tsai (Masdar Institute)
  - Mr. Neri Askland (Statoil, Vice President ME and Country Manager Abu Dhabi)
  - Mr. Ian Havercroft (Global CCS Institute, Senior Advisor Legal & Regulatory)
  - Mr. Paul Zakkour (Carbon Counts, Director)

**13:00 – 14:00      Lunch Break**

**14:00 – 16:00      SESSION 6: HIGH LEVEL PANEL: THE VIABILITY OF CCS OPTIONS AND WAY FORWARD.**

- ***Mr. Mohammad Abu Zahra (Masdar Institute) - Moderator***
- ***Mr. Habib El Andaloussi (ESCWA, Chief, SDPD/Energy Section)***
- ***Mr. Ibrahim Abdelgelil (Arab Gulf University, Professor, Energy & Environment)***
- ***Mr. John Scowcroft (Global CCS Institute, Executive Advisor, EMEA)***
- ***Mr. Yann Le Gallo (Geogreen, Operation Manager)***
- ***Mr. John Gale (General Manager, IEAGHG R&D Programme)***
- ***Mr. Wolf Heidug (IEA, Senior Analyst, CCS Unit)***