

ASIA CLEAN ENERGY FORUM 2019

PARTNERING FOR IMPACT

MANILA | 17–21 JUNE 2019



Deep Dive Workshop

Friday, 21 June 2019, 8:00 a.m. – 5:30 p.m.

Asia Wakes Up to CCUS



Point of Contact:

Darshak Mehta, Consultant, SDCC
dmehta.consultant@adb.org

Jinmiao Xu, Energy Specialist, SDCC
jinmiaoxu@adb.org

Background

The International Energy Agency (IEA) has estimated that in order to limit average global temperature rise to 2°C below pre-industrial era in most economical way, 14% emission reduction will have to come from carbon capture and storage (CCS). In case the ambition is to limit this temperature rise to well below the 2°C, then the contribution of CCS will have to be increased to 32 percent. CCS's importance in global emission reduction has been further endorsed in the Intergovernmental Panel on Climate Change (IPCC) special report, Global Warming of 1.5°C. In recent years, there is a renewed interest in storage of Carbon as well as carbon utilization. It is triggered due to international commitments to reduce greenhouse gas emissions and technical developments which have lowering the cost of capture. while visualizing new ways of utilizing CO₂.

The Asian Development Bank (ADB) has been promoting carbon capture, utilization and storage (CCUS) in Asia since 2009 with support from the Department for Business Energy and Industrial Strategy, Government of UK, as well as the Global Carbon Capture and Storage Institute, Australia. ADB has been working with its developing member countries (DMCs) to identify new opportunities in CCUS, prepare regulatory frameworks and grow a research network to create opportunities for low carbon development through CCUS implementation.

As part of its ongoing efforts to encourage knowledge exchange on CCUS amongst its DMCs, as well as other countries of the world, ADB is organizing the **Opportunities for Cooperation on CCUS Research and Pilot Projects Roundtable** to be held on 20 June, and the **Asia Wakes Up to CCUS Deep Dive Workshop** which is set on 21 June 2019. These events will deliberate on issues of CCUS development in Asia and serve as a bridge between stakeholders across the world.

The roundtable will be a closed-door meeting of CCUS stakeholders and centers of excellence (COE). It will facilitate sharing of experiences and explore possibilities of joint research as well as pilot projects. This meeting may have a limited number of invited observers. The deep dive workshop will introduce state-of-the-art technologies to inspire implementation of similar projects in Asia and directly leapfrog to the next phase of CCUS development. Selected topics are expected to be transformative with multiplier effect.

The events will be attended by the Government of UK (Department for Business, Energy & Industrial Strategy), US Government (Department of Energy), World Bank, International CCS Knowledge Centre (Canada), Lanzatech Inc (USA), Carbon Energy Technology Co. Ltd. (PRC), Shanxi Yanchang Group (PRC), Battelle Limited (USA) as well as other international stakeholders.

Agenda

8:00 – 8:30 a.m. **Registration**

Opening Session

The opening session will be giving overview of current status of CCUS in the world and will introduce some of the state of art technologies. It will inform about the efforts made by multilateral / bilateral organisations and will also share views of the developing member countries on barriers and opportunities in implementing CCUS.

8:30 – 8:40 a.m. **Welcome speech**
Yongping Zhai, ADB (TBC)

8:40 – 8:55 a.m. **Opening Remarks**
Peter Warren, Department for Business, Energy & Industrial Strategy, UK Government

8:55 – 9:10 a.m. **CCUS Current Status and Future Trend**
IEA Representative (TBC)

9:10 – 9:25 a.m. **Clean Energy Ministerial CCUS Initiative**
Jarad Daniels, Director, Office of Strategic Planning and Engagement
Office of Clean Coal and Carbon Management, Office of Fossil Energy,
US Department of Energy

9:25 – 9:45 a.m. **Supercritical CO₂ Cycles and their Relevance to CCUS**
NetPower Representative (TBC)

9:55 – 10:25 a.m. **Fuel Production from CO₂**
Jennifer Holmgren, Chief Executive Officer, LanzaTech (TBC)

10:30 – 11:00 a.m. Tea Break

11:00 – 11:45 a.m. **Panel Discussion: Jump-starting and Deployment of State-of-the-Art CCUS Technologies in Asia**

Panelists:

Peter Warren *Department for Business, Energy & Industrial Strategy, UK Government*

Nataliya Kulichenko, *Senior Energy Specialist World Bank*

Technology Missions Division, Department of Science and Technology, India (TBC)

Young Joo Lee, *Director, Coordinating Committee for Geoscience Programmes in East and Southeast Asia*

Session 1 — CO₂-Enhanced Oil Recovery in Asia

- 11:00 a.m. – 12:30 p.m. **CO₂-Enhanced Oil Recovery in Asia – Status and Way Forward**
This session will include brief presentations on the status and way forward for enhanced oil recovery using CO₂ in developing countries of Asia. The presentations will be followed by discussion of a panel of experts and stakeholders in enhanced oil recovery.
- Presentors:**
- **Ruimin Gao**, *Shaaxi Yanchang Group*
 - **Omkarnath Gyani**, *Institute of Reservoir Studies, ONGC, India (TBC)*
- 12:30 – 1:30 p.m. Lunch
- 1:30 – 2:15 p.m. **CO₂-Enhanced Oil Recovery in Asia – Status and Way Forward – Panel Discussion**
Panel Members:
- **Beth Hardy**, *Vice President, Strategy & Stakeholder Relations, International CCS Knowledge Centre, Canada*
 - **Neeraj Gupta**, *Senior Research Leader, Battelle, USA*
- 2:15 – 2:30 p.m. **CCUS Quiz**
This is an interactive game to be participated in by the audience. This game intends to share basic trivia about CCUS.

Session 2 — Showcasing Near Term CCUS Technologies

- 2:30 – 3:30 p.m. **Innovations in CO₂ Utilization**
The discussion will showcase innovative technologies utilizing waste CO₂. Discussion will include their economics, comparison with conventional manufacturing in terms of GHG emissions, future opportunities, and possible market penetration strategies in Asia.
- Presenters:**
- **Peng Kang**, *Founder, Carbon Energy Technology (Beijing) Ltd. Co. (PRC)*
 - **Xi Liang**, *Secretary General, UK-China (Gungdong) CCUS Centre*
 - *NTPC (India) TBC*
 - *Technology of CO₂ and SO_x combined stripping*

3:30 – 4:00 p.m. Tea break

Session 3 — Financing CCUS Technologies

- 4:00 – 4:45 p.m. **CCUS Financing and Business Case**
The session will discuss the challenges and opportunities in financing and promoting investments in CCUS in Asia. Experiences and insights in financing and

promoting entrepreneurship in CCUS will also be discussed in this session. This session will include presentations and a panel discussion.

Closing Session

4:45 – 5:30 p.m.

Leapfrogging ideas in CCUS - Action Plan for the Future

This session will include a panel of multilateral agencies, experts, and government representatives who will deliberate on the insights and learnings of the workshop and aim to draw a doable action plan that will leapfrog CCUS development and deployment in Asia.

5:30 – 5:40 p.m.

Closing Remarks