

# ASIA CLEAN ENERGY FORUM 2019

**PARTNERING FOR IMPACT**

17-21 June 2019 | Manila



## Deep Dive Workshop

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

*Auditorium A*

## Asia Wakes Up to CCUS



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### 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 CO<sub>2</sub>.

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 the United Kingdom, 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), NetPower (USA), Carbon Energy Technology Co. Ltd. (PRC), Battelle Limited (USA), as well as other international stakeholders.

## Agenda

8:00 – 8:30      **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      **Welcome speech**

*Yongping Zhai, Chief of Energy Sector Group, ADB*

8:40 – 8:55      **Opening Remarks**

*Peter Warren, Senior Policy Advisor and Senior Climate Finance Investment Lead, Department for Business, Energy & Industrial Strategy, Government of the United Kingdom*

8:55 – 9:10      **CCUS Current Status and Future Trend**

*Raimund Malischek, Senior Energy Analyst, International Energy Agency*

9:10 – 9:25      **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      **CO<sub>2</sub> to Ethanol in Industrial Processes**

*Jennifer Holmgren, Chief Executive Officer, LanzaTech*

9:45 – 10:05      **Supercritical CO<sub>2</sub> Cycles and their Relevance to CCUS**

*Adam Goff, Principal, 8 Rivers Capital*

10:05 – 10:0      **ADB's Role in CCUS Development in Asia**

*Jinmiao Xu, Energy Specialist, Sustainable Development and Climate Change Department, ADB*

10:20 – 10:30      **Q and A**

10:30 – 11:00 **Tea Break**

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

Representatives from governments of ADB developing members countries, as well as countries from other regions actively involved in CCUS development and deployment, will share their experiences and insights on jumpstarting the deployment of advanced CCUS technologies in Asia.

Moderator: **Priyantha Wijayatunga**, *Director, South Asia Department, ADB*

Panel Members:

- **Peter Warren**, *Senior Policy Advisor and Senior Climate Finance Investment Lead, Department for Business, Energy & Industrial Strategy, Government of the United Kingdom*
- **Xian ZHANG**, *Deputy Director, The Administrative Centre for China's Agenda 21, Ministry of Science and Technology, Government of the People's Republic of China*
- **Mahbuba Farjana**, *Director (Deputy Secretary), Energy and Mineral Resources Division, Government of Bangladesh*
- *Technology Missions Division, Department of Science and Technology, India (TBC)*

## Session 1 — CO<sub>2</sub>-Enhanced Oil Recovery in Asia

11:45 – 12:30 **CO<sub>2</sub>-Enhanced Oil Recovery in Asia – Status and Way Forward Panel Discussion**

In this session, international experts on enhanced oil recovery will deliberate on the status and way forward for enhanced oil recovery using CO<sub>2</sub> in developing countries of Asia.

Moderator: **Shannon Cowlin**, *Senior Energy Specialist, Energy Division, South East Asia Department*

Presenter:

- Neeraj Gupta, Senior Research Leader, Battelle, USA

Panel Members:

- **Beth Hardy**, *Vice President, Strategy & Stakeholder Relations, International CCS Knowledge Centre, Canada*
- **Young Joo LEE**, *Director, Coordinating Committee for Geoscience Programmes in East and Southeast Asia*

12:30 – 1:30 **Lunch**

## Session 2 — Financing CCUS Technologies

1:30 – 2:15 **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.

Moderator: *Nataliya Kulichenko-Lotz, Lead Energy Specialist World Bank*

Presenters:

- *Julien Perez, Strategy and Policy Director, Oil and Gas Climate Initiative*
- *Xian ZHANG, Deputy Director, The Administrative Centre for China's Agenda 21, Ministry of Science and Technology, Government of the People's Republic of China*

Q and A

2:15 – 2:30

### CCUS Quiz

This is an interactive game to be participated in by the audience. This game intends to share basic trivia about CCUS.

## Session 3 — Showcasing near-term CCUS technologies

2:30 – 3:30

### Innovations in CO<sub>2</sub> Utilization

The discussion will showcase innovative technologies which utilizes waste CO<sub>2</sub>. Discussion will include their economics, comparison with conventional manufacturing in terms of GHG emissions, future opportunities, and possible market penetration strategies in Asia.

Moderator: *Sherwin Pu, Principal Investment Specialist, Private Sector Operations Department, ADB*

- *Peng Kang, Founder, Carbon Energy Technology (Beijing) Ltd. Co.*
- *Xi Liang, Secretary General, UK-China (Guangdong) CCUS Centre*
- *Bharti Garg, PhD Scholar, Federation University Australia*
- *Sebastian Peter, Associate Professor, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research*

3:30 – 4:00

### Tea break

4:00 – 4:20

### Pathways to Meeting the Challenges by the CCUS Centres of Excellence of Asia

CCUS Centres of Excellence in Asia as well as other regions will share their insights and experiences on CCUS research, development and demonstration challenges in Asia and provide possible pathways to meet these challenges.

## Closing Session

4:20 – 5:00

### 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.

Moderator: *Ashok Bhargava, Director, Central and West Asia Department, ADB*

Panel Members:

- *Nataliya Kulichenko, Lead Energy Specialist World Bank*
- *Bolat Amanzholov, Chief Expert in Public Policy, Power Sector Department, Kazakhstan*