



CCS – RESPONDING TO THE CLIMATE CHANGE CHALLENGE

The Global CCS Institute accelerates the adoption of carbon capture and storage (CCS), a key solution in mitigating climate change and enhancing energy security.

The Institute advocates for CCS as one of the many options required to reduce greenhouse gas emissions, both from power generation and industrial sources. It shares information from its international Membership, while building capacity to ensure that CCS can become a widely-used technology as quickly as possible.

WHAT IS CCS?

CCS (also known as ‘carbon capture and sequestration’) is a suite of technologies preventing large quantities of carbon dioxide (CO₂) from being released into the atmosphere. CCS can be broadened to include ‘utilisation’ of the captured CO₂ (CCUS).

CCS/CCUS makes a vital contribution towards greenhouse gas reduction efforts, in partnership with other low-carbon technologies. It reduces the emission of CO₂ from industrial facilities and power stations, and generally involves:

- collecting or capturing the CO₂ produced at large, stationary emission sources;
- transporting it to a suitable storage site and pumping it deep underground to be securely and permanently stored in rock; and/or
- using the captured CO₂ as a value-added commodity or in some cases, reacting it with other compounds, thus locking it into a stable mineral.

Why is CCS needed?

At the same time as the Earth is warming up due to rising greenhouse gas emissions, world energy demand is projected to grow by more than 40 per cent over the next two decades. Electricity sourced from fossil fuels currently accounts for more than 40 per cent of the world’s energy-related CO₂ emissions. A further 25 per cent comes from large-scale industrial processes such as iron and steel production, cement making, natural gas processing and petroleum refining.

The International Energy Agency (IEA) recently re-affirmed the importance of CCS as one of a group of technologies to tackle climate change. In its Energy Technology Perspectives

2012, the IEA stated that “carbon capture and storage remains critical in the long term”, and that “CCS is the only technology on the horizon today that would allow industrial sectors (such as iron and steel, cement and natural gas processing) to meet deep emissions reduction goals”.

A portfolio approach

Renewables, like CCS, are an important part of a sustainable clean energy portfolio. However, given the large, easily accessible, low-cost reserves of fossil fuels available, those fuels will continue to be used to generate power and support industry for many decades to come. The Institute advocates for CCS as one option that can stem these emissions as the world transitions to a new energy future.

THE GLOBAL CCS INSTITUTE IN CHINA

Making CCS a commercial, cost-competitive technology as fast as possible is the fundamental reason the Institute exists. The Institute brings together projects, policy-makers and researchers in an effort to overcome challenges facing CCS. From there, it creates channels through which to learn from each other, to promote the smooth and rapid roll-out of this important technology.

Sharing knowledge

The Institute uses the lessons learnt by CCS projects around the world to provide information to a broader audience, thus enhancing the understanding of technical, economic, financial, commercial, and public engagement issues facing CCS. In aid of this, the Institute hosts a progressive digital knowledge sharing platform to assist its Members and the broader CCS community to network, collaborate and

share information more effectively. Project proponents and Members in China can benefit from a regional knowledge sharing network backed up by access to global information.

The Institute also works to bridge knowledge gaps between CCS demonstration projects, whereby it develops and implements project-specific solutions, benefiting many early-stage projects.

Fact-based advocacy

The Institute uses facts to inform and influence domestic and international low-carbon policy, as well as increasing the awareness of the benefits of CCS and the role it plays.

A major piece of work in this area is the annual publication of the Global Status of CCS, a report constituting the most comprehensive 'stock take' of CCS projects and their developments worldwide.

Partnerships

The Institute has a number of active partnerships in place with key players in the CCS arena, including the International Energy Agency (IEA), Asian Development Bank (ADB), World Bank, The Climate Group, Clinton Climate Initiative, the Clean Energy Ministerial CCUS Action Group and the Carbon Sequestration Leadership Forum (CSLF). Through these partnerships, the Institute extends its influence in addressing challenges facing the commercialisation of CCS.

Institute activities in China

The Institute's Beijing Representative Office aims to provide a range of valuable services and opportunities to the Institute's Chinese Members to assist them in their pursuit of CCS. Underpinned by the building and sharing of knowledge, these services and opportunities include:

- increasing CCS capacity through the delivery of thematic CCS workshops and dissemination of relevant CCS information;
- facilitating greater cooperation by providing linkages both domestically and with the global CCS community;
- promoting greater domestic and international support for CCS through advocacy activities; and
- promoting public acceptance of CCS through project engagement and outreach activities.

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Prior to joining the Institute, Dr Lin worked for Environment Canada and the University of Regina in Canada for more than 10 years, and also conducted various collaborative projects as a visiting scientist and Professor in Taiwan, China and the UK. He served as an invited expert with the United Nations Development Programme in 2010.

Dr Lin was also a Director and a Vice President of the International Society for Environmental Information Sciences and an Associate Managing Editor for the ISEIS Journal. Prior to 2000, Dr Lin worked with Jilin Chemical Co., with China National Petroleum Corporation as an environmental engineer and with Sinochem Co. as a sales representative and manager in China.

Dr Lin has peer-reviewed, authored or co-authored over 30 papers that were published in various energy and climate change journals.

Dr Lin's education background includes a B.E. (Major in Environmental Engineering, Minor in Computer), an M.A.Sc, and a Ph.D. (Environmental Systems Engineering). He also holds a lawyer qualification certificate in China and is a registered Professional Engineer in Saskatchewan, Canada.

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