



MEETING THE CLIMATE CHALLENGE

The Global CCS Institute accelerates carbon capture and storage (CCS), a vital technology to tackle climate change and provide energy security.

The Institute advocates for CCS as a crucial component in a portfolio of technologies required to reduce greenhouse gas emissions.

WHY CCS?

Climate change

Since pre-industrial times, the concentration in the atmosphere of several greenhouse gases, notably carbon dioxide (CO₂), methane and nitrous oxides, has increased substantially. The stability of our climate is directly linked to the atmosphere, so variations in the level, or concentration, of any greenhouse gas will have an impact.

Atmospheric levels of CO₂ are now higher than at any time in the past 800,000 years, reaching 400 parts per million (ppm) in early 2013, compared to a pre-industrial high of 280 ppm.

Reducing man-made CO₂ emissions, including those produced through the burning of fossil fuels, is a key element in mitigating greenhouse gas emissions and the dangerous effects of climate change.

WHAT IS CCS?

CCS is an integrated process involving three distinct stages:

- capturing CO₂ produced by large power or industrial plants using fossil fuels (coal, oil, gas)
- compressing it for transportation
- injecting it deep into a rock formation at a carefully selected and safe site, where it is permanently stored.

All components of CCS are proven technologies that have been used for decades at a commercial scale. Indeed, CCS technology is being used around the world in different ways and is already cutting greenhouse gas emissions.

WHY IS CCS NEEDED?

The best science available tells us that there is no single solution to climate change. Mitigating the increasing global levels of greenhouse gases released into the atmosphere requires a range of clean energy solutions, including energy efficiency and demand management measures, renewables

and a suite of other low-carbon technologies, of which CCS is a vital component.

The International Energy Agency (IEA) estimates that the exclusion of CCS as a technology option in the electricity sector alone would increase investment costs by around US\$3 trillion by 2050 if temperature increases are to be limited to no more than 2°C.¹ Beyond the electricity sector, the IEA has stated that completely decarbonising the energy system would be unlikely without CCS.

This is because CCS is currently the only way to burn fossil fuels without adding significantly more CO₂ to the atmosphere. The technology can be applied to gas and coal-fired power plants as well as emissions intensive industry such as oil refining or producing iron, steel, cement and ammonia.

What about renewable energy sources?

The IEA has projected that world primary energy demand will increase by 35% between 2010 and 2035.²

Emerging economies are consuming rapidly increasing amounts of energy as they industrialise and standards of living continue to improve. To satisfy demand, it is not surprising they are using fossil fuels, which are abundant and affordable. Similarly, developed countries continue to burn fossil fuels and emit large quantities of CO₂ at a significant rate in power generation and industrial processes.

As these trends are expected to continue into the foreseeable future, it is clear that the world will continue to depend on fossil fuels, even with advances in alternative sources of energy such as hydropower, solar, wind, marine and geothermal.

THE GLOBAL CCS INSTITUTE'S ROLE

The Institute drives the adoption of CCS as quickly and cost effectively as possible by sharing expertise, building capacity and providing advice and support to overcome challenges.

Sharing knowledge

The Institute generates, collects and shares information, experiences and lessons learnt by connecting people and networks. This enables government and industry to accelerate the uptake of technology, improve public awareness, reduce costs and drive innovation.

Fact-based advocacy

The Institute positions and promotes the critical role of CCS in a low-carbon economy. It does this by connecting and advising key domestic and international influencers on the overall benefits of CCS.

The Institute also raises the profile of CCS as a vital, safe and clean energy technology through ongoing media and public awareness campaigns. Greater understanding of the technology advances the development, demonstration, and deployment of CCS and leads to the formation of appropriate incentives, funding, financing and risk solutions.

Strengthening capacity for CCS implementation

The Institute helps Members to build capability for implementing CCS demonstration across people, technology and policy matters.

We do this by working directly with stakeholders to support the development of appropriate policies and programs, building understanding of financial and commercial issues as they affect projects, and deploying capability development programs.

As a result, we are able to make progress on a range of complex challenges that have an impact on the demonstration of CCS.

FLAGSHIP ACTIVITIES

The Institute's high profile, 'flagship' activities demonstrate its substantial efforts in fact-based advice and advocacy, authoritative knowledge sharing and creating the conditions to implement CCS.

- *The Global Status of CCS* report documents the progress and challenges facing the CCS sector. Based on the findings of the Institute's annual survey of projects around the world, the report provides a comprehensive overview of the state of CCS policy, legal and regulatory developments, technologies and large-scale demonstration projects.

The report has become the world's most comprehensive stocktake and analysis of CCS progress. The Institute's authoritative analysis of the issues, insights and recommendations for accelerating the development, demonstration and deployment of CCS globally, make this one-of-a-kind publication particularly valuable.

- World-leading repository of knowledge – The Institute is a source of expertise that helps to advance CCS projects which are complex and rely on a wide range of disciplines, including emerging technologies.

Feedback from project proponents around the world indicates that the sharing of expertise is vital to accelerate deployment. To support this, the Institute has acquired, analysed and published an extensive range of expert reports and articles on CCS experiences and developments throughout the world, making it the most popular international CCS web resource.

The Institute's expertise is also available on Arabic, Chinese, Japanese and Korean microsites.

MEMBERSHIP AND GOVERNANCE

The Institute has a diverse international membership made up of national governments, global corporations, small companies, environmental non-government organisations, research bodies and universities. They form part of an influential and collaborative community committed to deploying CCS on a global scale to mitigate climate change and create a future characterised by clean energy security.

The Institute's governance and advisory support comprises a Chief Executive Officer, Board, International Advisory Panel and expert panels. Members are able to contribute to setting the Institute's strategic direction and work priorities through a work program consultation process.

INTERNATIONAL COLLABORATION

The Institute influences the international standing of CCS and its progress by working collaboratively with multilateral bodies (such as the IEA, Carbon Sequestration Leadership Forum and Clean Energy Ministerial CCUS Action Group), and ensuring CCS is represented at key climate change and energy security forums.

In conjunction with the Asian Development Bank, World Bank and others, the Institute has supported or undertaken programs to deploy CCS and develop capacity in technology, regulation, policy and finance in emerging economies.

1 IEA, 2014. *Energy technology perspectives 2014*. OECD/IEA, France.

2 Ibid.

FOR MORE INFORMATION

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