



GLOBAL
CCS
INSTITUTE

ANNUAL
REVIEW

2014

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about the **INSTITUTE**

The Global CCS Institute is an international membership organisation.

Our mission is to accelerate the development, demonstration and deployment of carbon capture and storage (CCS), a vital technology to tackle climate change and provide energy security.

Working with and on behalf of our Members, we drive the adoption of CCS as quickly and cost effectively as possible by sharing expertise, building capacity and providing advice and support so that this vital technology can play its part in reducing greenhouse gas emissions.

Our diverse international membership consists of governments, global corporations, small companies, research bodies and non-government organisations committed to CCS as an integral part of a low-carbon future.

We are headquartered in Melbourne, Australia with regional offices in Washington DC and Brussels and country offices in Beijing and Tokyo.





OUR VISION FOR CCS

- ▶ CCS is an integral part of a low-carbon future

OUR MISSION

- ▶ To accelerate the development, demonstration and deployment of CCS globally

OUR OBJECTIVES

- ▶ Authoritative knowledge sharing
- ▶ Fact-based influential advice and advocacy
- ▶ Create favourable conditions to implement CCS

OUR OUTCOMES

- ▶ Increased public understanding and acceptance of CCS
- ▶ Increased commercial opportunities for CCS
- ▶ Equal treatment of CCS with other clean energy technologies in energy and climate change policy

OUR VALUES

- ▶ Quality – We strive for excellence in all that we do. For our Members, we are a trusted knowledgeable and responsive partner known for excellent advice and service delivery.
- ▶ Collaboration – We work cooperatively with colleagues and our Members. Our teamwork goes beyond organisational and geographic boundaries to achieve exceptional results.
- ▶ Integrity – We hold ourselves and each other to the highest standards in all we do and say. Our actions and communications are Member responsive, socially, environmentally and economically responsible, ethical and respectful of diversity.

CHAIRMAN'S *message*



It is becoming very clear that climate change is a reality and probably the greatest challenge of our generation. The evidence has continued to increase in particular from the IPCC's Fifth Assessment Report – the most comprehensive assessment of climate science ever undertaken. It states that human influence on the climate system is clear and growing. In his recent address to the 2014 UN Climate Summit, IPCC Chairman R.K. Pachauri stressed that our time for action is running out. If we carry on with business as usual, our opportunity to remain below the two degrees limit will slip away well before the middle of the century.

We must address this reality. The need for global advocacy to ensure that CCS is part of the solution cannot be overstated. We were delighted to play our part recently by collaborating with SaskPower to promote the launch of the world's first commercial CCS power project to the international media achieving excellent results. This is one example of the Institute's work with and on behalf of our Members as we advocate for CCS as part of a least cost approach to addressing climate change. Now we must ensure that debate moves on to consider how we build on the learning and expertise to re-energise its deployment as part of the measures to reduce CO2 emissions.

COP 21 in Paris, 2015 is shaping up to be the key to driving the change mechanisms needed to lower our CO2 emissions. We know that the months leading up to COP21

are crucial and we look forward to working with our Members to raise the profile of CCS as a vital climate mitigation technology. We are committed to do everything reasonably possible to advocate for CCS on the international climate agenda in order to progress commercial deployment and making low emissions technology a reality.

At the same time, the Institute will continue to play an important underpinning role in ensuring the latest learning and expertise is available to all our Members. We do this through multiple channels including our advanced knowledge networks, our websites, webinars and of course our Member conferences, meetings and workshops. We are always pleased to respond to an increasing number of Member requests for meetings and webinars on specific topics.

I have personally attended our International Members meeting in Seoul and several regional meetings including Australia, North America and Europe and am encouraged by the increase in interest in CCS Globally. I have been impressed with the level of engagement from Members on all aspects of our work. I welcome this input as it helps the Board ensure that our strategic direction meets your needs as a unique Forum that brings together Government, Industry, Research organisations and NGO's to share information and promote genuine collaboration to increase the uptake of CCS.

Member feedback tells us that you value this capability to connect to a broad network of global expertise in a relevant way. I am pleased to say that we have now completed our transition to specialist staff who are now located in each region rather than at head office.

Another important aspect of our transition is the move to a fee-paying membership model. It was always intended that the Institute would move from the generous seed funding provided by the Australian Government over the last five years to become a sustainable organisation funded by its Members. We are now well advanced in our process of securing Member commitment and I am pleased that a number of leading governments and companies have already confirmed their continued membership.

Following feedback from the consultation process, the following changes will take effect at the start of 2015 to focus on the needs of our paid up Members:

- Only Members will have the opportunity to influence the direction and work priorities of the Institute.

- Only Members will have access to project updates, policy updates, personalised briefings and invitations to workshops, study groups, taskforces and networking events.
- Only Members will have open access to future Institute reports and publications such as The Global Status of CCS report.

We will fulfil our role in advocating for CCS by providing summary information about the importance of CCS in dealing with climate change while restricting access to comprehensive analysis, learning and expertise to fee paying Members only.

I would like to take this opportunity to thank you for your support of the Institute. Since its inception the Institute's output has been focused on ensuring CCS continues to be an integral component of a low-carbon future and we will continue to seek policy parity with other lower CO2 emitting technologies and renewables. It is only with the collaboration of and with our Members that together we have been able to make inroads towards achieving this goal. I sincerely hope that the Institute remains a key partner in your endeavours towards making CCS a global reality. I look forward to working with you as we usher in a new era for CCS and the Institute in an era of greater Global commitment to addressing Climate Change with CCS seen as a practical and cost effective strategy.



Paul Douglas
Chair
Global CCS Institute

CEO'S *message*



As we go to print for this Annual Review, I wish to take a moment to commend one of the most significant milestones for CCS in recent years – the commissioning of the first commercial scale CCS power plant in the world; SaskPower’s Boundary Dam facility in Canada. The journey to make CCS a reality on power took great foresight, planning, innovation, research and development, along with a supportive policy approach. SaskPower’s leadership is inspiring on many levels especially for our Members. While others may be at an earlier stage it is the Institute’s mission to have the structure and resources in place to accelerate CCS around the world.

Globally, progress is proceeding well. We will soon have a critical mass of CCS commercial scale power projects with two more being completed in the US in the next year or so. CCS project deployment has doubled since the beginning of this decade, with 22 large-scale CCS projects now in operation or construction. The Institute has undergone significant changes of its own in order to better support our Members through this time of growth and change. At all times, our role of facilitating knowledge, expertise and collaboration remains at the forefront of our work.

The Institute has continued to align its organisational structure to meet the needs of our Members worldwide. Our Members have called for regional expertise and I’m pleased to introduce three new regional General Managers:

Dr Elizabeth Burton – The Americas, Clare Penrose – Asia Pacific, and Andrew Purvis – Europe, Middle East and Africa. Together they complete an experienced and Member focused Leadership Team, who have appointed their own teams of regional specialists who operate locally but are globally connected to the latest developments.

The Institute has strengthened its delivery on knowledge sharing, taking a focused and tailored approach in producing the latest CCS information. The increase in collaboration and participation from our Members is testimony to the success of this approach with unprecedented attendance at our member events around the world, a doubling of attendance at our interactive webinars and a sharp increase in demand for our knowledge networks.

Our role to champion the need for CCS around the world has seen our fact-based influential advocacy approach bring greater public awareness for the technology. Over the year our global advocacy and voice joined the growing groundswell of support for CCS from many levels of government, industry and research. The Institute is internationally renowned as the leading resource for CCS information, with our *Global Status of CCS* report now recognised as the leading guide to CCS developments. We have also used it to advocate for CCS with media coverage up 33% from the previous year including articles in the New York Times, Reuters, the Guardian and the Australian. This year we authored and commissioned over 100 publications translated into multiple languages, providing perspectives and the latest analysis crucial to driving deployment of CCS.

In a bid to bring CCS understanding to a broader audience, we launched two public facing websites that complement our existing corporate site. Decarboni.se connects a broad clean-energy audience on a web platform that places CCS firmly alongside renewable and alternative energy resources. The approach has been highly successful in showcasing emerging decarbonisation technologies, hosting thousands of low-carbon technology resources and publications alongside content that profiles the role for CCS. Our new CO2degrees site explains CCS to a general audience to build public awareness and profile our international CCS education materials and courses. We encourage our Members to link their own online resources to our websites.

In order to create favourable conditions for CCS, the Institute has continued to facilitate capacity development initiatives around the world. We have worked closely

with national governments, state-owned enterprises and major companies to ensure a regionally appropriate approach to developing CCS. Our support for CCS in developing countries remains a focus with the Institute working together with a number of CCS capacity development organisations such as the World Bank, Asian Development Bank and the CSLF.

The Institute has taken an active role in advocating for CCS at the highest international levels, working tirelessly to ensure CCS remains on the agenda during climate change negotiations at the UNFCCC. We have participated at each conference of parties (COP) since our inception, including Warsaw in November 2013, releasing information such as the Global Policy Index. Recently we became an accredited observer to the Green Climate Fund, championing the interests of CCS. The Institute will continue to play an influential role on behalf of its Members particularly in the lead up to the important climate change decisions expected at COP 21, Paris in 2015.

In the three years since I have been CEO, I'm heartened at the momentum and change taking place in our industry and am pleased to report on the impact of the Institute. We are now ready, able and operating at full speed to help make deployment of CCS a reality around the world. I look forward to working together with you through the next year as we progress this vital technology.



Brad Page
Chief Executive Officer

INSTITUTE *achievements*

Institute achievements

The Global CCS Institute (the Institute) drives the international carbon capture and storage (CCS) agenda in three key areas:

- ▶ authoritative knowledge sharing
- ▶ fact-based, influential advice and advocacy, and
- ▶ creation of favourable conditions to implement CCS.

This Annual Review covers the Institute's work achievements for July 2013 – June 2014.

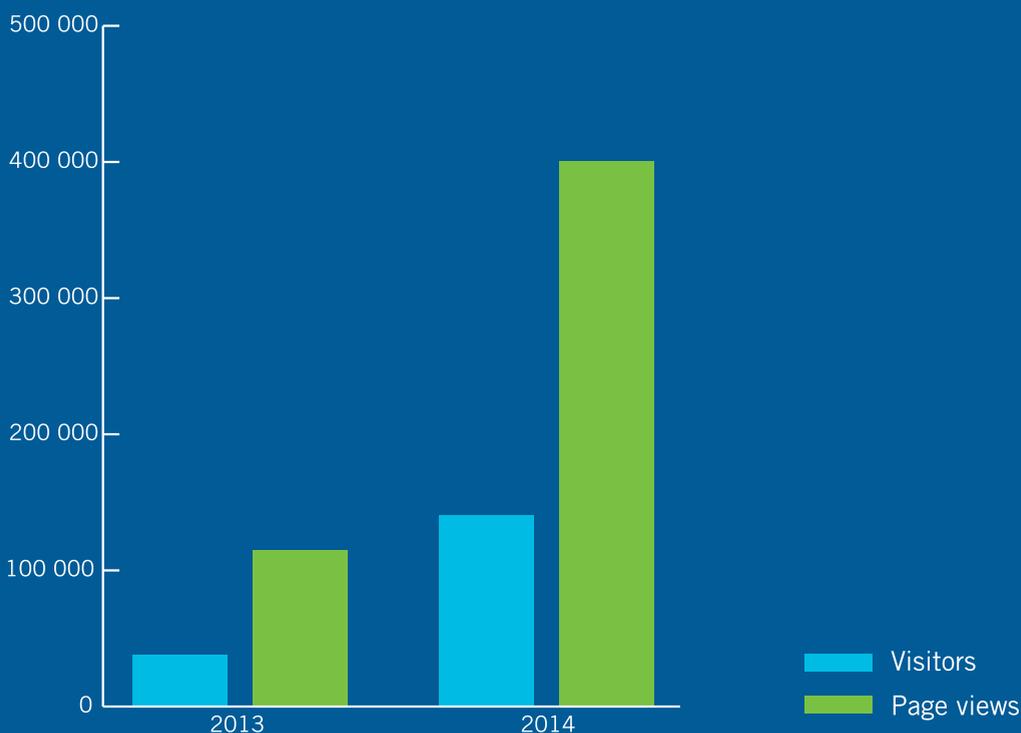
Authoritative knowledge sharing

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.

We strive to provide value at a global and local level by tailoring information to meet our Members' regional needs. We provide our Members with the ability to access the latest global CCS information and expertise.

This year we continued to generate, collect and share information, experiences and lessons learnt by connecting people and networks. We produced a range of publications and websites to inform and build awareness on the progress of CCS and provided insights at a global and local level by tailoring information to meet our Members' needs.

AVERAGE MONTHLY WEB TRAFFIC ACROSS INSTITUTE WEBSITES



DIGITAL RESOURCES

A key method of communication with Members, the wider CCS community and the general public is through the Institute's web-based knowledge sharing platforms. In order to target messages to different audiences and communicate with diverse groups in the effort to accelerate the deployment of CCS, the Institute launched two new websites in 2014, to complement the existing corporate site. The public web channels continue to be a widely-utilised source of information, reaching up to 140,000 visitors per month over the past year and around 400,000 monthly pageviews. This is a 230% improvement in users and 350% improvement in pageviews over the twelve month period.

The number of individual online visitors continues to steadily increase and new sites have expanded the Institute's reach. The countries with the highest number of visitors to the corporate site are the US, the UK, Australia, Japan, India, Canada, China and Korea. Since launching the new Decarboni.se web platform, substantial interest has been gained from developing countries around the world.

In addition to publications, over 130 online opinion articles ('Insights') were produced by Institute staff and key CCS, climate and energy experts, complementing our more detailed publications and targeting priority audience groups.

Many Insights, publications and news items were translated into Chinese, Japanese, Korean and Arabic along with original content, which was also published in these languages.

The Institute-driven Decarboni.se website connects a broad clean energy audience and the general public with information on low-carbon technology options, highlighting CCS as an important part of the portfolio of solutions. The site (see page 15) also introduced significant improvements in our ability to help other organisations republish and repurpose information on the topic of decarbonisation. Since its launch in March 2014, content from over 500 organisations has been published.



PUBLICATIONS

In 2013–14 we authored and commissioned over 100 publications on the topic of CCS, with many translated into multiple languages. These resources bring together the knowledge of staff, Members and the CCS community, providing perspectives and analysis on different facets of CCS to support policy making and project implementation.

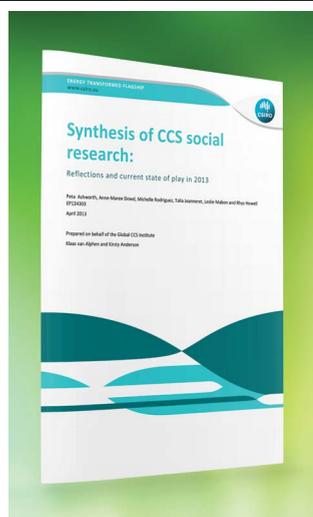
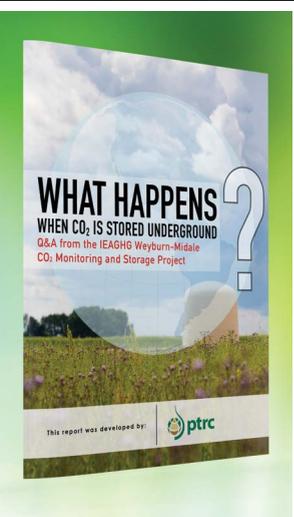
Our flagship publication, *The Global Status of CCS: 2013* was published in October 2013. The report is the world's most comprehensive record and analysis of progress in CCS policy, legal and regulatory developments, technologies and large-scale demonstration projects.

The Global Status of CCS: February 2014, an update to the annual edition, was launched at the annual Platts European Carbon Capture & Storage Conference in Brussels, enabling us to promote key messages on CCS in Europe.

Other key publications, supported or authored by the Institute and released in 2013–14 include:

- *Assessing atmospheric emissions from amine-based CO₂ post-combustion capture processes and their impacts on the environment: a case study*, CSIRO
- *Callide Oxyfuel Project: lessons learned*, Callide Oxyfuel Project
- *What happens when CO₂ is stored underground? Q&A from the IEAGHG Weyburn-Midale CO₂ Monitoring and Storage Project*, Petroleum Technology Research Centre (PTRC)
- *Moving below zero: understanding bioenergy with carbon capture and storage*, The Climate Institute
- *Synthesis of CCS social research: reflections and current state of play in 2013*, CSIRO
- *Bridging the gap: an analysis and comparison of legal and regulatory frameworks for CO₂-EOR and CO₂-CCS*.

Our full library of publications is available at globalccsinstitute.com/publications



WEBINARS

Webinars, or online workshops, have become an increasingly important way to make information accessible to our Members and the global CCS community. The Institute’s webinar program continues to develop, with Institute staff and guests presenting verbal and visual highlights on a regular basis.

Based on the success of the Institute’s webinar program, we were called upon to by Member organisations to deliver their content to our broad network of CCS stakeholders. During the year webinars were delivered in languages other than English for the first time, further broadening the audience for CCS information. Webinar recordings are published on the Institute’s website.

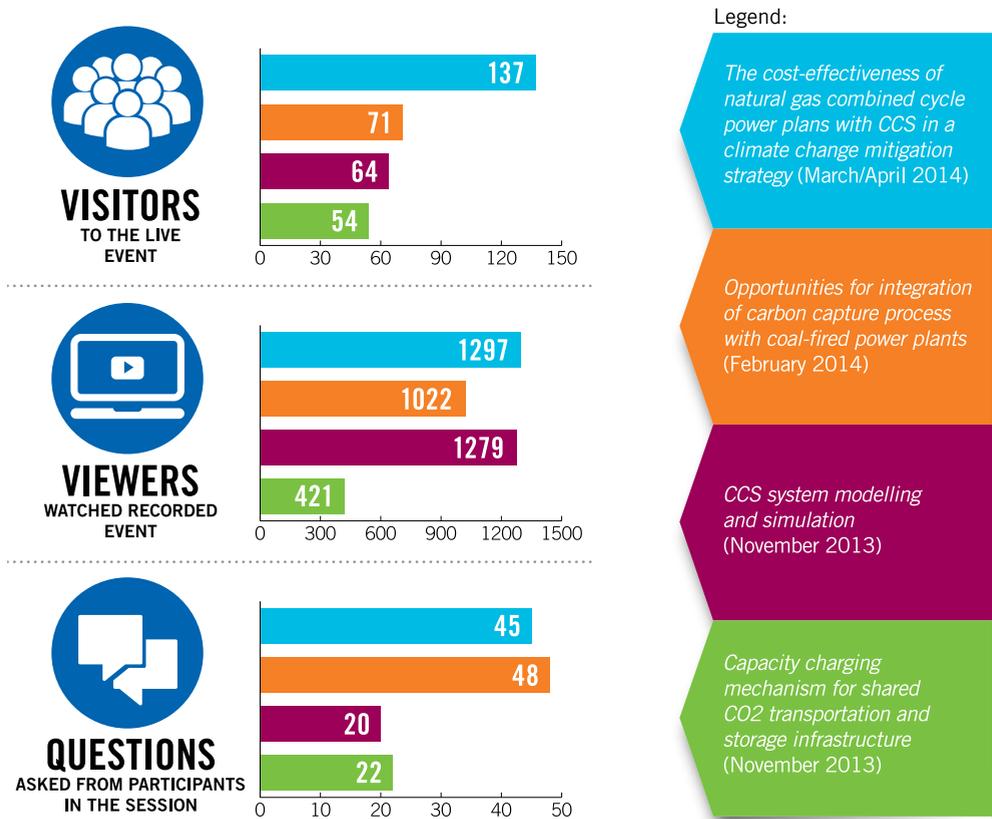
Some recent examples include:

- *The cost-effectiveness of natural gas combined cycle power plans with CCS in a climate change mitigation strategy* (March/April 2014) – 137 visitors to the

live event, 1297 viewers watched the recorded event, 45 questions asked from participants in the session.

- *Opportunities for integration of carbon capture process with coal-fired power plants* (February 2014) – 71 visitors to the live event, 1022 viewers watched the recorded event, 48 questions asked from participants in the session.
- *CCS system modelling and simulation* (November 2013) – 64 visitors to the live event, 1279 viewers watched the recorded event, 20 questions asked from participants in the session.
- *Capacity charging mechanism for shared CO2 transportation and storage infrastructure* (November 2013) – 54 visitors to the live event, 421 viewers watched the recorded event, 22 questions asked from participants in the session.

In 2013-14, the Institute hosted over 25 well-attended webinars in 2013-14, more than double its target.



KNOWLEDGE DISSEMINATION

The Institute's knowledge building capability is recognised by several international organisations that make use of our advanced online knowledge sharing services.

Knowledge networks

The Institute provides knowledge dissemination services for the European CCS Demonstration Project Network under a contract with the European Commission (EC). Under this agreement, we optimise support for CCS deployment in the European Union (EU), engaging these countries and sharing CCS knowledge and information. Key information for public dissemination relates to priority themes such as storage, regulatory developments in CCS and public engagement.

The Network is a collaborative effort between several European CCS demonstration projects with the goal of creating a prominent community of projects united to accelerate the deployment of CCS by 2020. The Institute, together with consortium partners TNO, IFP and SINTEF, provides secretariat and

knowledge dissemination services for the network. The project collaborates privately on an extranet and also has a public knowledge sharing site.

In Japan, the Institute works with over 40 representatives from 20 organisations to run the Japanese Knowledge Network. The network focuses on CCS communications issues. This network has developed resources on CCS-related topics of particular interest to the Japanese public and established a pilot public outreach program involving around 1,000 people. Whilst collaboration within the network occurs in Japanese, a number of final reports have been published in English for wider dissemination.

Globally, the Institute runs the secretariat for the International CCS Test Centre Network, which accelerates carbon capture technology development by sharing lessons learnt between the world's leading test centres. Its mission is to create a secure forum for experts to share knowledge on CCS related topics such as health and safety, laboratory equipment and monitoring and instrumentation.



Above: The Institute's Executive Adviser for Europe, Middle East and Africa John Scowcroft presents at the European CCS Demonstration Project Network Meeting in Ponferrada, Spain in May 2014.

DRIVING COOPERATION ON PROJECTS

The Institute continues to advocate for a substantial portfolio of projects that can become flagships for all aspects of CCS, suitable for building awareness about the technology across different regions and industries around the world.

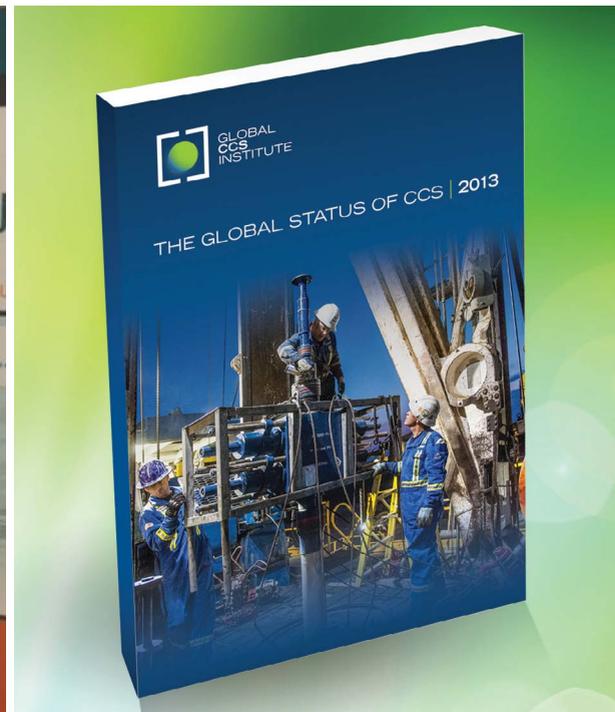
Providing up-to-date information on CCS projects to equip for better informed decisions

The Institute continues to monitor the development of CCS projects and provides the most up-to-date data on the essential facts on the large-scale integrated projects around the world. This information is provided:

- in reports, such as the comprehensive annual *Global Status of CCS* report released each October/November and the shorter status updates, released periodically
- via the Institute’s corporate website, which contains a range of data and images, along with detailed project descriptions

- by Institute staff making presentations at a range of speaking events around the world, including:
 - the annual Platts European Carbon Capture and Storage conference
 - the 14th Annual CCUS Conference in Pittsburgh
 - 2013 All Energy conference, the International Low Rank Coal Industry Symposium and the World Coal Association events in Australia
 - the Korea CCS International Conference
 - the annual JCOAL Conference in Japan.

The Institute works closely with CCS projects in monitoring their development. This year, Institute staff worked with Members and CCS proponents to update details of all projects in the Institute’s database, to ensure the most up-to-date information is widely available. In preparation for *The Global Status of CCS: 2014* report, major changes have also been made to the Institute’s annual project survey to reduce the amount of time and effort required by projects to complete the survey.



Left: Institute General Manager – Europe, Middle East and Africa Andrew Purvis and CEO Brad Page attend the 8th Annual Platts European Carbon Capture and Storage event.

COLLABORATING ON KNOWLEDGE SHARING

Significant barriers to CCS deployment include perceptions of risk, and local community feelings about the technology. The Institute is working to address these issues in a number of ways, including working with and supporting other bodies to ensure their research in these and other fields is more widely known. Several examples of such collaboration are apparent in recently-published reports.

Outputs demonstrating the Institute's work with the network of existing bodies, establishing new programs where necessary, to overcome the barriers to broad industrial-scale deployment are:

- supporting the work of the IEA CCS Unit, the CEM CCUS Action Group, and the CSLF, including to ensure consistency of messaging going to Ministers
- actively participating in the work of the United Nations Framework Convention for Climate Change (UNFCCC) and its subsidiary bodies to advocate the role of CCS in helping to achieve global climate goals
- supporting and disseminating work by key research and ENGO groups that help with broad messaging about CCS to build community confidence in the technology, such as the CCS Facts and Policy Forum in Washington DC
- work in operating a number of key knowledge networks, including the European CCS Project Network, Japanese Knowledge Network and International CCS Test Centre Network.



Above: CEO Brad Page speaks at the World Energy Congress in the session: *Carbon capture utilisation and storage: Making a difference in time?*

decarboni.se

SOLUTIONS TO CLIMATE CHANGE



DECARBONI.SE

Decarboni.se, launched in March 2014, is an easily-accessible knowledge sharing platform that brings together information and publications from organisations active in CCS, as well as resources focusing on other areas of decarbonisation of the energy sector. It positions CCS as a core component of the suite of low-carbon technologies. This positioning has been critical in increasing awareness of CCS with people who are interested in solving climate issues, but may have a greater focus on other technology solutions.

The broader content strategy on Decarboni.se has made a significant impact in increasing the visibility of CCS as a viable decarbonisation technology, driving traffic and visibility for CCS publications and Insights. For example, an Insight on ways to capture and reuse CO₂ has over 30,000 pageviews, while the key publication it references has had its traffic increased by 600%. In five months the Facebook page for Decarboni.se has over 50,000 'likes' from the general public worldwide. Content is further shared across a number of web platforms that are more specialised, such as the Institute's corporate site or the European CCS Project

Network, while social media helps drive relevant audience members to content.

In addition to sharing information with the professional community there is also a focus on members of the general public such as students, citizen scientists and the broad technical community. Analysis conducted as part of the project indicated that these groups were very interested in climate change solutions and would comprehend the complexities around CCS implementation.

From a web architecture and process perspective, Decarboni.se has transformed the way the Institute shares information online. This approach has reduced the complexity of the technical environment. It provides the organisation with dramatically-improved capabilities for collecting, sharing and promoting information and for engaging new audience groups. Our new public web architecture also enables the Institute with a much better capability for building new online platforms. Finally, it provides an enhanced digital platform architecture for the Institute to deliver knowledge sharing services for other organisations.

Fact-based, influential advice and advocacy

The Institute supports the demonstration and deployment of CCS technology through advice and advocacy. We position and promote the critical role of CCS in a low-carbon economy by connecting and advising domestic and international key influencers on the benefits of CCS, including carbon capture, utilisation and storage (CCUS) opportunities.

We also raise the profile of CCS, as 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.

The Institute actively participates in international forums to advocate for the inclusion and recognition of CCS as an effective climate change mitigation technology.

In 2013-14 year, we convened international and regional meetings and were active at key industry events in each region. Here, we continued to raise the profile of CCS and support the progress of CCS related research, policy, planning, communication and project implementation.

INCREASING PUBLIC UNDERSTANDING AND ACCEPTANCE OF CCS

The Institute raises the profile of CCS as a vital low-carbon technology through ongoing media and public awareness campaigns, and explanatory material for Members.

MEDIA COVERAGE

The Institute's proactive advocacy work helped feature CCS in numerous high profile publications including front page CCS-focused featured articles in leading innovation magazine *Wired*, *Gasworld* and *Chemical Engineering Magazine*. Proactive media activity saw a successful media roundtable at an Institute hosted event in the Americas result in extensive national and international CCS focused coverage that was positive in nature, enabling a media platform for high profile Members including the United States Department of Energy (US DoE) and the Environmental Protection Agency (EPA).

The Institute worked closely with several project partners to support and launch leading CCS-related reports that explain and explore CCS to the general public, detailing infrastructure and technical issues to CCS proponents and toolkits for government stakeholders.

Media coverage of *The Global Status of CCS: 2013* report, released in October 2013 was extensive, with more than 125 articles published across all our regions, including in *The Guardian*, *The New York Times*, *The Globe and Mail*, *The Australian* and *Reuters*. This was an increase of 33% from 2012 and more than five times coverage in 2011. Most articles included the Institute's key points on what is needed to advance CCS. Similarly, a significant increase in media coverage was generated with the release of the February 2014 report, with 25 articles recorded in the three weeks post the report launch. This was an increase of 76% from the January 2013 report.

MAKING AN IMPACT ON INTERNATIONAL DECISION MAKING

The International Energy Agency (IEA), the Clean Energy Ministerial (CEM) and the Carbon Sequestration Leadership Forum (CSLF) are the major intergovernmental bodies which incorporate CCS as a low-carbon technology. The Institute funds and works closely with the IEA CCS Unit, thus ensuring a major focus for CCS within that body's overall work program.

One area of close cooperation between the IEA and the Institute is in providing joint support for, and secretariat services to, the CEM's CCUS Action Group (AG). Working with the Action Group's government and other members, the Institute and the IEA jointly produced a high-level submission on CCS for ministers at the CEM meeting held in Seoul on 12-13 May 2014. The Institute also hosted an AG meeting in February in Brussels. For this meeting the Institute prepared a discussion-starter paper, highlighting progress made to date on the areas identified by the seven AG recommendations which were tabled at CEM2.

The Institute played an active role in the 5th CSLF Ministerial Meeting held in Washington, DC in November 2013. This included a scene-setting presentation to Ministers by CEO Brad Page on the global status of CCS. The other high-level presentation was by IEA Executive Director Maria van der Hoeven, again highlighting the way in which the IEA and the Institute work together.

As a donor to the CSLF Capacity Building Fund, the Institute sits on the CSLF Capacity Building Governing Council as the vice-chair, and continues to provide advice and, where requested, project support to the CSLF capacity development program.

ADVOCATING FOR CCS THROUGH WORKING IN UNFCCC FORUMS

The annual conference of parties (COP) to the UNFCCC is the most important forum working to reach global agreements to address the issue of climate change. Within these forums and related subsidiary bodies, the Institute actively advocates for CCS as a critically important mitigation option capable of substantially contributing to limiting global warming. At each COP, including that in Warsaw in November 2013, the Institute has:

- released several new information products, such as the Global Policy Index
- held or participated in several events with a range of partners, and key stakeholders
- convened a high-level dialogue hosted by Lord Nicholas Stern, a member of the Institute's International Advisory Panel (IAP).

During 2013-14, the Institute was accepted as a member of the Climate Technology Centre and Network and was designated as an accredited observer to the Green Climate Fund. This allows us to play an influential role in the deliberations and activities of these important bodies.

The Institute hosted an exhibition at the UNFCCC COP 19 meeting in Warsaw, Poland, conducting multiple informal and formal meetings with key stakeholders from government and industry.

PUBLIC AWARENESS AND CCS EDUCATION

The Institute works with educators in school, university and community systems around the world to increase awareness, knowledge and skills on the role of CCS in dealing with climate change and energy security. The approach is to provide materials and training to teachers and lecturers, so that they are enabled to teach subjects or courses in CCS specifically, or CCS as part of a low-carbon future. There is a strong focus on education facilities in communities affected by planned or operational CCS projects.

School education

At the primary and secondary school levels, the Institute has developed an *Energy in a low-carbon future* that sits within its 'CO2degrees' brand, a resource which is being adapted for local conditions and trialled in Japan, with discussions under way for use in other regions. We contributed material to the Regina Catholic School Board CCS Education resources which have been published and circulated to all Catholic schools in the Regina area of Saskatchewan, Canada. Also in Saskatchewan, the Institute is working in collaboration with SaskPower, the Petroleum Technology Research Centre (PTRC) and Plains CO₂ Reduction

(PCOR) Partnership to co-ordinate an education and outreach program and challenge event with Saskatchewan schools in the lead up to the opening of the Boundary Dam CCS Project in late 2014.

Tertiary education

At the tertiary or university level, four Malaysian and two Mexican Universities have now signed licence agreements with the Institute's for the use of education materials and are teaching a CCS course. A 'train-the-trainer' workshop was held in South Africa in March 2014 to introduce the materials to that country, at which over 35 representatives from South Africa's major Universities and CCS related industries participated.

Junior Professional Legal and Regulatory Tutorial Group

The Institute's second round of the Junior Professional Legal and Regulatory Tutorial Group was successfully completed in March 2014. Attracting over 100 applicants from around the world, the well-attended online tutorial featured live lectures presented by leading international experts on recent developments in the CCS legal and regulatory space.



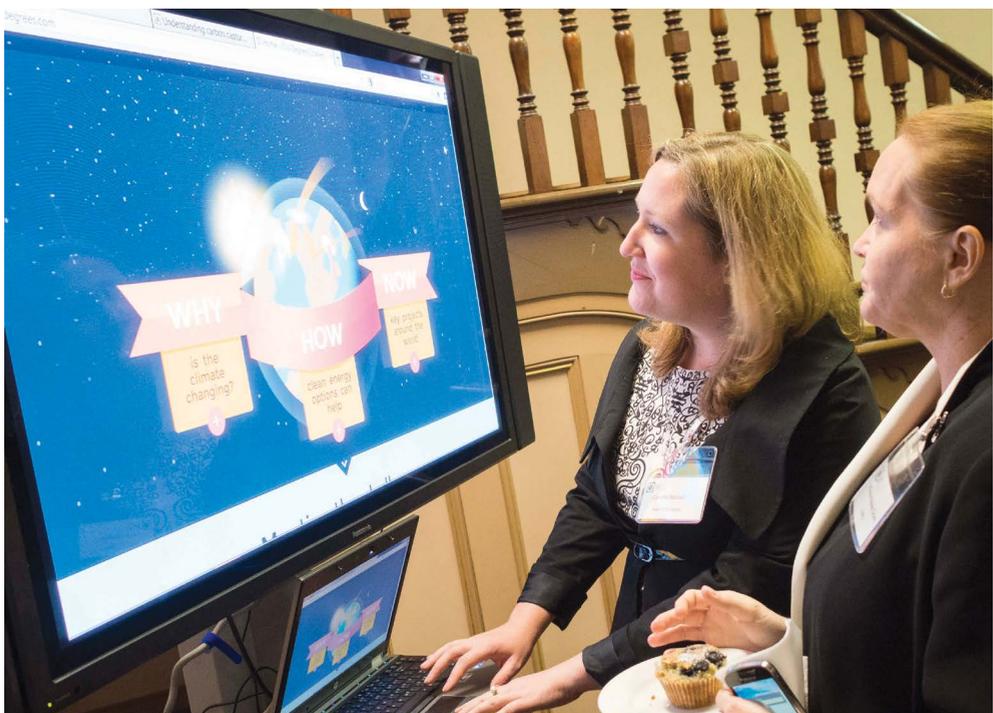
Above: Students at Boddam Primary School in Aberdeenshire, Scotland take part in a CO2degrees education workshop.

CO₂degrees challenge

CO2degrees challenge, launched by the Institute in May 2014, is a CCS explanatory website aimed at the general public.

In addition to explaining CCS in a simple and engaging way, the site directly addresses the global challenge of climate change— limiting CO₂ emissions while keeping global average temperature increase to within two degrees Celsius. It then presents the range of low-carbon solutions, and provides the reader with more information about CCS as a key part of that portfolio.

Featuring bold and engaging graphics and animation, the site is designed to appeal to audiences of any age. Visitors to the site can learn more about the latest in CCS via engaging content including articles, videos, and other interactive resources. In addition, the site provides an entry point for CCS educators to collaborate and share resources and experiences.



Above: The Institute's Senior Media and Publications Consultant Caroline Baldwin demonstrates the CO2degrees site at the Australia Members' Meeting in June 2014.

Creating favourable conditions to implement CCS

The Institute works with stakeholders to:

- support the development of appropriate policies and programs
- build understanding of financial and commercial issues as they affect projects, and
- run capacity development programs in non-OECD (Organization for Economic Cooperation and Development) and OECD countries.

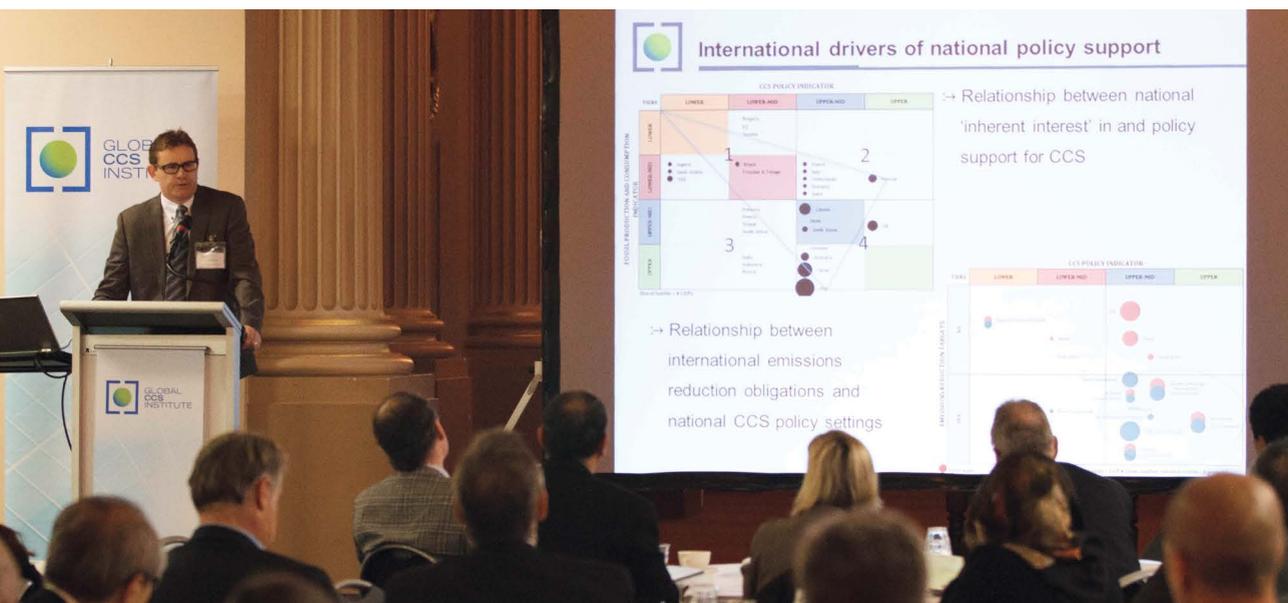
The Institute supports the development and implementation of CCS policy and regulatory frameworks. During the year we contributed to international and national CCS standards and supported efforts to improve public understanding of CCS commercial propositions.

We provided advice, risk assessment, fact-based community engagement and compliance services and support for CCS projects.

This year, we continued to influence the international standing of CCS and its progress by working collaboratively with multilateral bodies, research and environmental policy organisations, and ensuring CCS is represented at key climate change and energy security forums.

INTERNATIONAL STANDARDS AND SYSTEMS (ISO)

The ISO has a Technical Committee on CO₂ capture, transportation, and geological storage. The Institute is an approved liaison organisation for the Committee, participating in the work of the main Committee as well as its various working groups, including meetings held in Beijing in September 2013 and in Berlin in March–April 2014. This Committee is working on standardisation of design, construction, operation, environmental planning and management, risk



Above: Mark Bonner, Principal Manager – International Climate Change for the Global CCS Institute presents on international policy at the Australia Members’ Meeting in June 2014.

management, quantification, monitoring and verification, and related activities in the field of CCS. Such standards will be important in assisting governments to regulate all aspects of the CCS chain, in gaining community acceptance of the technology, and in helping equipment suppliers and project proponents to build and operate facilities.

As part of its liaison activities, the Institute is working to be an active clearinghouse and standard setter for CCS deployment in the following ways:

- undertaking initiatives to make complex information more accessible, such as webinars
- increasing the availability of CCS knowledge by providing foreign language reports and hosting knowledge networks
- participating in the work of the ISO which is developing international standards for all aspects of the CCS chain.

CAPACITY DEVELOPMENT

Modelling from the IEA and other international bodies demonstrates that the majority of CCS deployment will need to be in developing countries by the middle of this century if the world is to have any chance of meeting its climate goals. The Institute recognises the importance of developing countries and maintains an active capacity development program to assist these countries increase awareness, understanding and ultimately deployment of CCS.

As part of the Institute's Capacity Development Program, we initiated and facilitated capacity building initiatives in: Brazil, China, India, Indonesia, Malaysia, Mexico, South Africa, Trinidad and Tobago, and Venezuela. We work closely with national governments, state-owned enterprises and other major companies, research and educational bodies in each country of focus. The Institute seeks to ensure that each individual country program is agreed by all major stakeholders, through forums such as the High-Level Dialogue held in Mexico in February 2014 and the CCS Roundtable in Brazil in April 2014. Capacity Development Programs for Mexico and Brazil were developed as a result of these meetings.



Above: Participants at the CCS roundtable held at the Petrobras Research and Development Center (CENPES), hosted by the Institute and Petrobras in Rio de Janeiro in April 2014.



Above: Delegates attend an Institute-hosted site tour to Toshiba Corporation carbon capture plants on Kyushu Island in March 2014.

Opposite page: Professor Myles Allen of the University of Oxford presents at the *Global Status of CCS: 2013*, Seoul.

Other initiatives of note during 2013-14 included delivering 'train-the-trainer' courses for Malaysian and South African academics and industry professionals as part of our sustainable education approach. The Institute continued its partnership with the Mexican and Venezuelan academic sectors, presenting a storage-webinar series, delivered in Spanish to maximise engagement.

The Institute financially supports a number of other CCS capacity development organisations, such as the Asian Development Bank (ADB), the World Bank and the CSLF. This helps support that the efforts of various CCS capacity development bodies are complementary rather than overlapping, maximising the outcomes achieved through collaboration. The Institute co-authored a report with the

ASEAN Centre for Energy, ASEAN CCS Strategic Considerations, aimed at raising awareness and facilitating a dialogue on CCS at the ASEAN Forum on Coal.

An evaluation of the Institute's overall approach to capacity development was conducted during the year. Based on the 'Most Significant Change' technique, this evaluation concluded that the Institute's Capacity Development Program has helped to facilitate participating countries' movement along the 'CCS Development Lifecycle', achieving our aim.

The Institute made an informal submission to the United Nations Environment Programme (UNEP) providing insight on developing country demand for CCS services. This was part of our work to assist UNEP as the official host to the UNFCCC's recently launched CTCN.

MEMBER *engagement*

A focus on the needs of Members is central to the mission of the Institute. Since its inception, the Institute's output has been focused on ensuring CCS continues to be an integral component of a low-carbon future. By collaborating with our Members, we have been able to make inroads toward achieving this goal. In 2013-14, we have consulted with many of our Members on the transition arrangements to a fee-paying membership model. Member feedback has been valuable in developing the strategy and our transition is now complete.

GLOBAL STATUS OF CCS: 2013, SEOUL

The Global CCS Institute's eighth international Member event was held in Seoul, South Korea, from 9-11 October 2013. The agenda featured a series of leading international speakers showcasing the latest developments in the CCS arena, and each session saw strong audience and panel discussion. A number of

themes were evident throughout the event, including the vital importance of CCS as part of the portfolio of technologies to tackle climate change, the need for strong policy support, and how technological advances will underpin future advancement. There were also valuable insights into CCS developments in South Korea and the region.

Seoul also served as the launch point for *The Global Status of CCS: 2013*, which attracted substantial international media and industry attention.

The 2013 event was our largest to date with over 200 delegates, and we were pleased to welcome a cross-section of Institute Members working in carbon capture, transport, utilisation, and storage industries around the world, with strong representation from CCS proponents from South Korea.



REGIONAL *highlights*

During the course of 2013-14, the Institute strengthened its regionally-focused organisational structure. This was achieved by building stronger regional and global networks and encouraging collaboration to achieve a beneficial result for Members. We also completed our appointment of new specialist staff based in the regions. The following highlights the breadth of our work within each region.

Europe, Middle East and Africa

REGIONAL PRIORITIES

- **Sharing knowledge:** build upon the European Commission's (EC) Project Network and expand our engagement in the Middle East to support regional information exchange.
- **Fact-based, influential advice and advocacy:** initiate high level meetings with energy, economic and environment Ministers, industry leaders and other major decision makers to promote the value of CCS.
- **Creating favourable conditions for CCS:** coordinate activities with the IEA CCS Unit, African capacity development initiatives and rollout of the regulatory toolkit.

The Institute's Europe, Middle East and Africa (EMEA) office is now located in Brussels, Belgium, which has strengthened our ability to meet and work with both Member representatives and key European stakeholders such as the European Commission and Parliament. The Institute continues to be active and visible at public events promoting the adoption of CCS technology across the region, including policy conferences, technical conferences and other events.

The Institute continues to provide secretariat services to the European Commission's CCS Demonstration Project Network. The Network made a number of key changes during the year with the aim of creating a more sustainable and effective CCS knowledge sharing network, these included opening up full membership to projects outside those in receipt of EEPGR grants and creating a new class of 'associate members' of the network open to organisations with a direct interest in CCS but necessarily involved in projects.

The Institute is also continuing to support the International Test Centre Network, launched by Technology Centre Mongstad (TCM), and is exploring new opportunities to create Knowledge Networks, for example by working with a group of regions and companies aspiring to develop regional CO₂ hubs.

FEBRUARY REPORT LAUNCHED AT PLATTS

The Institute sponsored the Platts European Carbon Capture and Storage event, held in Brussels. The conference also served as the launch point for the Institute's *Global Status of CCS: February 2014* – a follow-up to the annual report released in October 2013. CEO Brad Page delivered a keynote address to launch the report. General Manager – Europe, Middle East and Africa Andrew Purvis also facilitated a panel discussion, 'Leaders Debate: The big gap – why can't CCS demonstration projects take FID yet?'.

Below: Institute General Manager – Europe, Middle East and Africa Andrew Purvis presents at the EMEA Members' Meeting.



STRENGTHENING TIES IN THE MIDDLE EAST

The Institute increased our engagement in the Middle East, with a number of opportunities occurring in the region. The *Global Status of CCS: 2013* report received its regional launch at the Global Clean Energy Forum in Qatar in October 2013, and the emergence of two projects in the execute stage in the region creates a promising platform for further activity. The *Global Status of CCS: 2014* Member event and launch of the 2014 report will be hosted in Abu Dhabi in November.

‘TRAIN THE TRAINER’ SOUTH AFRICA AND WEST ASIA EXPERT GROUP

In collaboration with the South African Centre for CCS (SACCCS), the Institute facilitated a capacity building ‘train the trainer’ workshop in South Africa, delivering expert presentations on the status of CCS, Public Engagement, Legal and Regulatory issues, and continues to work with the South African Centre for CCS to develop opportunities in the region. Representatives from the Institute also were invited to participate in the United Nations Economic and Social Commission for Western Asia Expert Group Meeting on Carbon Capture, Utilization and Storage held in Abu Dhabi.

Below: Reports produced in Australia, relevant to an international audience, that were showcased at the Australia Members’ Meeting.

Opposite page: Institute Chairman Professor Paul Dougas addressed the Australia Members’ Meeting in June 2014.

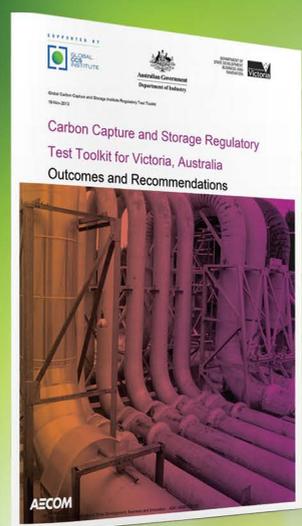
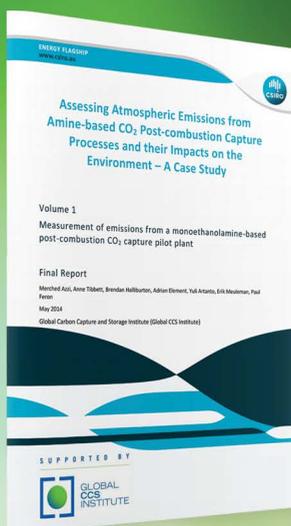
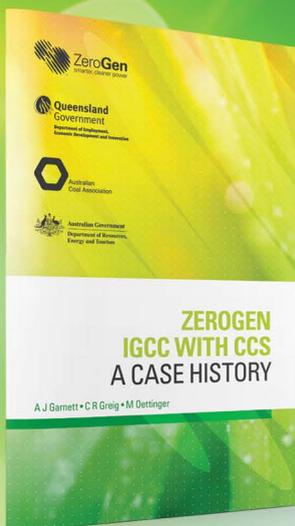
EUROPE, MIDDLE EAST AND AFRICA MEMBERS’ MEETING

The Institute’s EMEA Members’ Meeting was held 17-18 June 2014 in Amsterdam. European project leaders and experts met to discuss their insights into the opportunities and challenges for accelerating the deployment of CCS. Co-hosted by CATO-2, the meeting brought together the views and experiences from a wide range of sectors including governments, project proponents, the power and energy intensive industries, NGOs, and research community.

The meeting was moderated by Claude Mandil, the Chairman of the Institute’s International Advisory Panel and the closing remarks were given by the Institute’s Chairman Paul Dougas.

Through the day, Members presented and discussed key aspects of CCS, including the CCS program in the UK, industrial CCS, and the European and international policy landscape.

In a final round table session more proactive advocacy emerged as a priority for the Institute’s regional team.



Asia Pacific

REGIONAL PRIORITIES

- **Sharing knowledge:** further develop knowledge networks within key countries by providing more face-to-face meeting opportunities and the translation of key documents into multiple languages
- **Fact-based, influential advice and advocacy:** host our 2013 *Global Status of CCS: 2013* Member event in Seoul and produce submissions to UNFCCC in response to calls on issues such as market mechanisms, technology transfer and financing for CCS
- **Creating favourable conditions for CCS:** contribute to the development of robust legal and regulatory regimes for CCS, managing strategic partnerships and programs building capacity to implement CCS.

ASSESSMENT OF VICTORIAN CCS REGULATORY SYSTEM

In mid-2014, the Victorian Government, in collaboration with the Australian Government and the Institute, deployed the Institute's Regulatory Test Toolkit. The process demonstrated that the Victorian legal and regulatory regime is generally fit-for-purpose to accommodate a commercial-scale CCS project. It also highlighted opportunities to enhance the regulatory model. A detailed report of the toolkit exercise, including the final recommendations, is available to download from the Institute's website.

WORKSHOPS ON CARBON CAPTURE AND CCUS IN CHINA

The Institute's annual China CCUS workshop was held in July 2013 in Yan'An, Shaanxi province. The day-long workshop was jointly organised by the Institute and the Department of Climate Change, National Development and Reform Commission (DCC-NDRC), and hosted by Shaanxi Yanchang Petroleum Group. Over 140 Chinese participants took part, from central government, provincial governments, companies, universities and research organisations.



In November 2013, China Technology Strategic Alliance for CO₂ Capture, Utilization and Storage Technology Innovation was established under the supervisory of Ministry of Science and Technology. The Alliance dedicated to provide a CCUS network with over 35 members in 2013. The Institute co-hosted a workshop on CCUS in Beijing with the Alliance in February 2014.

In March 2014 the Institute co-hosted with the NDRC a workshop on carbon capture technology in Shanghai, China. This workshop brought together over 130 participants from the Chinese, provincial and international governments, domestic and international CCS research institutes, industry and multilateral organisations including World Bank and Asia Development Bank.

JAPAN MEMBERS' MEETING AND STUDY MEETINGS

On 19 June 2014, the Institute held its Japan Members' Meeting in Tokyo. The meeting attracted over 80 participants from Member organisations including government, research institutions, academia, industry, and consultancy. There was a strong focus throughout the day on CCS projects in Japan and internationally.

AUSTRALIA MEMBERS' MEETING

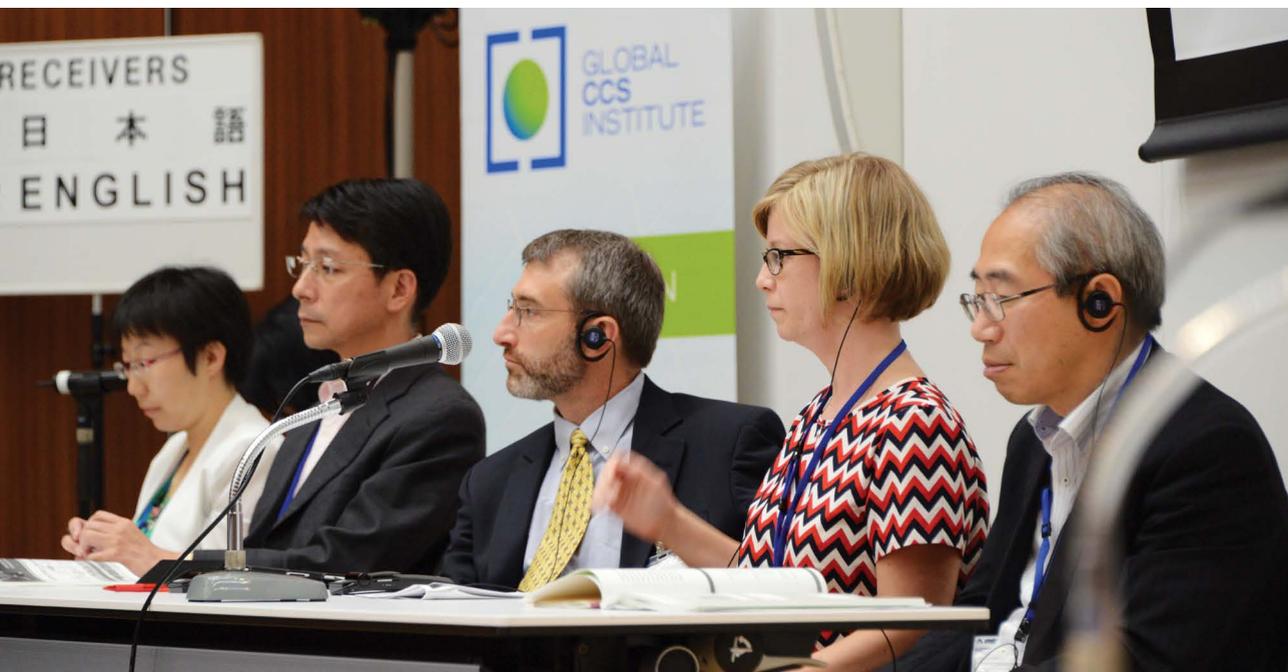
The Institute hosted the Australia Members' Meeting on 3 June 2014 in Melbourne. There was representation from our Member organisations with 60 participants across government, industry, academia and attendees from Malaysia and Japan.

The meeting provided an opportunity for Members to connect and discuss the latest developments for legal, policy and technology in the CCS arena in Australia and overseas.

The high level of engagement throughout the meeting demonstrated there continues to be a strong interest in CCS in Australia and the Institute looks forward to continuing to work with its Members to find opportunities for future developments.

Below: Panel discussion at the Japan Members' Meeting in June 2014.

Opposite page: Senator Heidi Heitkamp (ND) addresses the Capitol Hill briefing on CCS in June 2014.



The Americas

REGIONAL PRIORITIES

- **Sharing knowledge:** strengthen our engagement with Members and the broader Americas network through increased outreach activities and deliver high quality knowledge sharing experiences.
- **Fact-based, influential advice and advocacy:** engage with senior decision makers and other key stakeholders to advocate for an equitably inclusive policy platform for CCS/CCUS as a key component of a low-carbon technology portfolio.
- **Creating favourable conditions for CCS:** build key partnerships and relationships with governments to develop policies for CCS and taking on a regional leadership role in capacity development in developing countries.

THOUGHT LEADERSHIP IN WYE RIVER

The Institute held its Wye Thought Leadership Forum at the Aspen Wye River Institute in Queenstown, MD in July 2013. A select group of senior leaders from government and industry met to discuss issues, priority challenges, and new ideas to advance CCS/CCUS in the Americas.

13TH ANNUAL CCUS CONFERENCE, PITTSBURGH

In May 2014, the Institute co-sponsored the 13th Annual Carbon Sequestration Conference in Pittsburgh, PA, delivering a keynote address on *Global Perspectives on CCS/CCUS*. The event provided key government decision makers and leaders from industry and academia a forum to discuss recent CCS/CCUS developments as well as the policy, program and technology advances needed to meet carbon reduction targets.





WORKSHOPS AND BRIEFINGS

The December 2013 CO₂ Flooding Conference in Midland, Texas was the location for an Institute-sponsored workshop designed to raise the energy sector's understanding of CCS/CCUS as a commercially viable technology. The workshop focused on commercial opportunities for CO₂-EOR and the potential for CCUS as an enabler for CCS.

An Institute-sponsored *CCUS Overview: What Is It and What Are Its Implications?* was held at the October 2013 American Institute of Chemical Engineers (AIChE) Carbon Management Conference in Arlington, VA. The workshop, geared to individuals involved in CCUS but who are not experts in all aspects of the CCUS value chain, provided an overview of CCUS technology and gaps, and the legal and regulatory landscape for deployment of the technology.

In August 2013, the Institute briefed participants in the California Study Travel Project to Scandinavia on CCS developments and issues. The study trip was sponsored by the California Foundation on Environment and the Economy.

The Institute participated in the May 2014 US-Canada Bi-National Clean Energy Dialogue to advocate for CCS as a clean energy technology essential to meet GHG reduction targets and for an equitably inclusive policy platform for CCUS.

COLLABORATION WITH ATLANTIC COUNCIL

The Institute co-sponsored a series of events in collaboration with the Atlantic Council, a Washington, DC-based think tank that promotes constructive leadership and engagement in international affairs to meet global challenges:

- CCS Facts and Policy Forum: *Legislative Leadership and the Need for CCS Incentives* was held on Capitol Hill in May 2014. An expert panel with representatives from government, industry and environmental NGOs, outlined the need for policy incentives to advance the development and deployment of CCS technology, discussed proposed CCS legislation and proposed tax reforms to advance carbon capture technology through the greater use of CO₂-EOR.
- In March 2014, the Institute and the Atlantic Council co-sponsored the *ENGO Network on CCS: A Roundtable Discussion to Chart Policy Pathways Forward*, which included executives from CCS project proponents and the Environmental Nongovernmental Organization (ENGO) Network. The roundtable resulted in a reaffirmation of support for immediate, safe and effective CCS deployment as a critical tool to combat climate change and specific policy recommendations to accelerate commercial deployment of CCS in the Americas, with an emphasis on the US.
- A September 2013 Institute-Atlantic Council roundtable on *Advanced Fossil Energy Technologies: Key Issues in Ensuring Access to Energy, Protecting Energy Security, and Enhancing Environmental Performance* brought together executives from CCS project proponents, utility companies, environmental NGOs, and Congressional staffers to discuss key challenges, opportunities, and pathways forward.

BRIEFING SESSIONS FOR CONGRESS STAFF

The Institute's Americas staff met with key US Congressional Staff throughout the year to provide updates on the global status of CCS and CCUS developments, CCS/CCUS challenges and opportunities in the US, industry positions on the proposed EPA regulations, and potential policies to incentivise the development and deployment of CCS.

AMERICAS MEMBER EVENTS

In February 2014, 135 participants attended the Institute's *Third Annual Americas Forum: Moving CCS Forward – Actions and Opportunities* in Washington, DC.

Senior level government officials and executives from industry, environmental NGOs, scientific research institutions and academia took a forward look at CCS/CCUS and the pathways needed to advance CCS/CCUS in the Americas, including regulatory and policy issues for enhanced oil recovery as an enabler for CCS. The outcome of the meeting was a list of priority actions that helped inform the Institute's operational plan for the region.

The Institute also hosted an Americas Members' Meeting at the Annual CCUS Conference in Pittsburgh to review, discuss and refine the priorities for CCS/CCUS from the February forum in Washington, DC.



Above: Sheila Riordon, Minister (Political) – Embassy of Canada, Institute CEO Brad Page and Julio Friedmann, Deputy Assistant Secretary for Clean Coal – US Department of Energy at the Institute's Third Annual Americas Forum in February 2014.

Opposite page: Participants at the High-level Dialogue on CCUS vote on the Institute's CCS Capacity Assessment for Mexico in February 2014.

GOVERNANCE

The Institute's Constitution defines its function and provides a set of principles and procedures to govern its conduct. Among other things, the Constitution outlines the rights of Members, sets out procedures for considering Membership applications and for holding Members' Meetings, details the procedures for selecting the Institute's Board of Directors, and sets out the rules around meetings of the Board and its Committees.

As an international membership organisation, the Institute and its Board are committed to appropriate corporate governance. The Board acts in accordance with the *Australian Corporations Act*.

Role and structure of the Board

The role of the Board is established by the Institute's Board Charter. This role includes:

- acting in the best interests of the Company and providing accountability to its members
- providing overall strategic direction for the development, execution and modification of the Institute's strategy
- monitoring and ensuring compliance with legal and regulatory requirements and ethical standards and policies
- approving and ensuring compliance with the Institute's aim, objectives and values

Board members are independent, non-executive Directors.

There are five Directors:

- Prof Paul Dougas (Chair)
- Dr Makoto Akai, Director
- Tina McMeckan, Director
- Rachel English, Director, and
- Dr Mario Ruscev, Director.

Biographies for each Board member are provided on pages 34–35.

The Board formally delegates responsibility for the Institute's day-to-day operations and administration to the CEO and the Leadership Team. Profiles of the Institute's Leadership Team are provided on pages 36–38.

Board committees

The Institute has two Committees reporting to the Board – the Audit and Risk Committee (ARC) and International Advisory Panel (IAP).

AUDIT AND RISK COMMITTEE (ARC)

The ARC assists the Board in its oversight of material business risk. The ARC assists the Board in maintaining and improving the effectiveness of compliance strategies, internal and external audit functions, and the quality and credibility of financial accounting processes. Members of the ARC are:

- Tina McMeckan (Chair)
- Prof Paul Dougas
- Roger Amos.

INTERNATIONAL ADVISORY PANEL (IAP)

The IAP provides valuable guidance and advice to the Board, and its members act as ambassadors for the organisation. The IAP also provides experience in corporate building, strategic engagement, international liaison and government policy.

Members of the IAP are:

- Claude Mandil (Chair)
- Prof Paul Dougas
- Prof Zeng Rongshu, and
- Lord Nicholas Stern of Brentford, Kt, FBA.

BOARD SELECTION PANEL (BSP)

The role and functions of the BSP are outlined in the Company Constitution, with the key role being to nominate candidates for appointment as Directors. Each year two members of the BSP are required to retire. In 2014, Tone Skogen and Milton Catelin are due to retire from the BSP. Both members have to offer themselves for renomination for an additional term. During 2014 Blair Comley resigned from his position on the BSP and Martin Hoffman, representing the Australian Government, was to be appointed.

During 2013 the membership of the BSP was approved by Members to include Directors as appointed by the Board. BSP Membership is made up as follows:

Appointed Members (appointed by the Board)

- Prof Paul Dougas, Chair (appointed under Constitution)
- Ms Rachel English
- Dr Mario Ruscev

Elected Members (elected by Institute Members):

- Dr David White (Schlumberger Water & Carbon Services)
- Mr Milton Catelin (World Coal Association)
- Ms Tone Skogen (Government of Norway)
- Mr Martin Hoffman (Australian Government)

Board profiles



Professor Paul Dougas

Prof Paul Dougas is Chair of the Board of the Global CCS Institute and brings more than 40 years' experience in sustainability, financial, social and environmental consulting, and strategy development in the Australian, European, South American and Asian engineering and environmental sectors. He is non-executive Director of Mount Gibson Iron, Beacon Foundation, and Epworth Healthcare. Prof Dougas previously held the position of CEO and Managing Director of Sinclair Knight Merz for 15 years.



Dr Makoto Akai

Appointed 12 June 2009. Dr Makoto Akai is an Emeritus Researcher of Japan's National Institute of Advanced Industrial Science. He is a Coordinating Lead Author of the Intergovernmental Panel on Climate Change's special report on Carbon Dioxide Capture and Storage and brings a great deal of technical and non-technical knowledge and expertise associated with the energy sector and specifically CCS.



Tina McMeckan

Appointed 12 June 2009. Ms Tina McMeckan brings to the Institute substantial energy market experience. She is a non-executive Director of Ausnet Services Ltd and has previously served on the boards of a number of energy-related corporations, including Alinta Ltd, United Energy Ltd and Snowy Hydro Trading Pty Ltd. Further she has substantial experience as a company Director in commercialisation of technology.

**Rachel English**

Appointed 12 October 2010. Ms Rachel English has some 30 years international experience in leading energy companies, including BG Group, Shell, Entergy, and British Energy with responsibilities spanning finance, corporate strategy, mergers and acquisitions, and business development. She is a Non-Executive Director of African Barrick Gold plc and Kuwait Energy plc, the founder of Helios Social Enterprise and a member of the Audit Committee of the UK Department for International Development (DFID).

**Dr Mario Ruscev**

Appointed 12 October 2010. Dr Ruscev is currently the Chief Technology Officer at Baker Hughes Incorporated. Prior to this role, he was CEO of IGSS and also served as Executive Vice President of Integra Group and CEO of American nanotechnology company FormFactor. Dr Ruscev also spent 23 years at Schlumberger in a number of senior roles in France, the United Kingdom and Norway and has also worked on several Australian projects including the US-based FutureGen initiative. Dr Ruscev's project management experience is extensive and he has worked in the areas of water, CO₂ sequestration, and CCS.

Leadership team profiles



Brad Page
CHIEF EXECUTIVE OFFICER

As CEO of the Global CCS Institute, Brad brings extensive knowledge and experience on Australian and international climate and energy issues. Prior to the Institute, Brad served as CEO of the Energy Supply Association of Australia (esaa), the peak representative organisation of the electricity and downstream gas industry in Australia, for over seven years. During this time he acted as national spokesperson for these industries, and was also an active member of the Australian

Government Business Roundtable on Climate Change, the CSIRO Energy Transformed Flagship Advisory Committee, and the Australian Government Energy White Paper High-Level Consultative Committee.

During 2001 and 2002, Brad headed the secretariat for the Council of Australian Governments (COAG) Energy Market Review, recommending significant changes to the governance, regulation and policy development arrangements for electricity and gas markets. Brad also served as Chair of the Commonwealth Scientific and Industrial Research Organisation's (CSIRO) Energy and Transport Sector Advisory Council between November 2004 and January 2009.

Before joining esaa, Brad enjoyed a long career in the Australian Public Service, where he was heavily involved with government-led microeconomic reform initiatives, including the implementation of Australia's National Electricity Market and enabling third party access to natural gas transmission pipelines.

Brad holds a BA (Administration) and in 2009 studied the economics of climate change at Cambridge University as a British Council Chevening Fellow.



Dr Elizabeth Burton
GENERAL MANAGER – THE AMERICAS

Elizabeth joined the Institute as General Manager – The Americas on 1 June 2014. She joined the Institute from Lawrence Berkeley National Laboratory (LBNL) and brings over 25 years of experience in the energy sector, carbon management, and climate change research and policy. Elizabeth has worked internationally and in the United States and Canada on basic and applied research, technical and capital project management, outreach and education, and consulting for industry,

government regulators, and policymakers. Prior to LBNL, she worked at Lawrence Livermore National Laboratory, Chevron, and Northern Illinois University.

Elizabeth holds a PhD in Geology and is the author of over 100 technical publications and books.



Gareth Lloyd
GENERAL MANAGER – CORPORATE AFFAIRS

Gareth joined the Institute in April 2012, bringing more than 20 years' experience drawn from the corporate, agency and not-for-profit sectors. This includes managing communications for British Gas as it moved into a fully competitive gas market. He spent ten years as Director of Communications for a leading international energy company, National Grid, which was one of the first to develop a comprehensive approach to sustainability. He managed all the communications for the \$700m Basslink interconnector linking Tasmania with Victoria. He spent three years in the not-for-profit sector where he ran one of the UK's most successful recent environment campaigns Recycle Now. The national campaign combined online, TV advertising and local marketing activity and added 5 million active recyclers in three years. Gareth has worked in the media as Head of Communications for BBC English Regions.

Gareth is on the Board of the National Centre for Groundwater Research and Training.



Sean McClowry
GENERAL MANAGER – INFORMATION MANAGEMENT

Sean joined the Global CCS Institute in April 2010 as General Manager for Information Management. In this role Sean is focused on building a global exchange of CCS knowledge.

Sean has worked with dozens of organisations to solve complex issues related to knowledge sharing, information management and business strategy in a number of locations, including Australia, Europe and the US. He has done significant work with open source and collaborative technologies and is the founder of the www.openmethodology.org and www.open-sustainability.org initiatives.

Prior to joining the Institute, he was a Director at PricewaterhouseCoopers and has held national and global lead roles for information and knowledge sharing. He is also an Executive Director and Board Member for the MIKE 2.0 Governance Association.



Clare Penrose
GENERAL MANAGER – ASIA PACIFIC

Clare joined the Global CCS Institute in March 2014 as General Manager for the Asia Pacific region.

Prior to joining the Institute, Clare was General Manager Corporate Services and Review with the Climate Change Authority, the independent agency that advises the Australian Parliament on climate change policy. During this time, the Authority handed down major reports on the Australian Renewable Energy Target and Australia's greenhouse gas emissions reduction targets. In addition to managing the Authority's corporate services, Clare led the policy team assessing international climate change policies.

Previous to this, Clare was a senior adviser on climate, energy and environment policy to two Australian Prime Ministers and worked on the introduction of carbon pricing and reform of Australia's largest inland river system, the Murray Darling Basin.

She also worked for Australian and UK government environment agencies on issues such as assistance for Emissions Intensive Trade Exposed Industry under the Australian emissions trading scheme and international linking of the European Union Emissions Trading Scheme.



Andrew Purvis
GENERAL MANAGER – EUROPE, MIDDLE EAST AND AFRICA

Andy joined the Global CCS Institute in September 2013 following a career in the global steel industry. He spent the last five years working in BlueScope Steel in Australia as Vice President Environment, responsible for environmental performance and greenhouse policy. He also managed BlueScope Steel's input to the Australian Government's Climate Change policy development program.

His previous roles include working as Senior Manager, Technology and Environment at the Brussels-based World Steel Association, a dynamic and complex member-led industry association with a strong focus on environmental, technology and corporate responsibility. He also worked as a Research Manager within the British and Dutch Steel industries.

Andy has a Bachelor of Engineering from Leeds University and a Master of Business Administration from the University of Warwick.



Susan Steele
CFO/COMPANY SECRETARY

Susan joined the Institute in 2009 as Chief Financial Officer. Her previous position was CFO with a privately owned project management consulting firm, which grew to one of the top three international aid consulting firms with the Australian Government.

Susan has a strong financial background incorporating extensive experience in international business, establishment and company set up, project implementation and management, organisation structure and ownership, governance, legal, risk and contract management.

Susan has completed both the Australian and International Institute of Company Directors course and holds an MBA from the University of Canberra. She is also a member of the Institute of Public Accountants and the Australian Institute of Company Directors.

APPENDIX

Global CCS Institute Members

Key:

All Members 375

Collaborating Participants 5

ALL MEMBERS

2Co Energy Ltd

3D-GEO Pty Ltd

A.P. Moller – Maersk A/S

Accenture LLP

ACTYS BEE S.A.S

ADA-ES, Inc.

AECOM Australia Pty Ltd

AGH University of Science and Technology

Air Products and Chemicals Inc

Aker Clean Carbon AS

Aker Solutions

Alberta Innovates - Technology Futures

Alcoa of Australia Ltd

Alstom Power Ltd

Altona Energy PLC

Ambre CTL Limited (Ambre Energy)

AMEC PLC

American Electric Power Company

Angela Colliver Consulting Services Pty Ltd
(ACCS)

Anglo American Metallurgical Coal Pty Ltd

Anglo American Thermal Coal

Anthony Veder Group NV

ARC Resources

ArcelorMittal Research Maizieres S.A.I.

Arch Coal Inc.

Ashurst Australia

Asian Development Bank

ASME Australia

Aurecon Australia Pty Ltd

Australian National Low Emissions Coal
Research and Development Ltd

Babcock & Wilcox Company

Baker & McKenzie

Bechtel Power Corporation

Bellona

BG Energy Holdings Ltd

BHP Billiton Ltd

Biorecro AB

Bloomberg New Energy Finance

Blue Strategies LLC

Bluewave Resources, LLC

Booz & Co.

Boston Consulting Group

BP Australia Ltd

Brazilian Coal Association

British Geological Survey
 Brown Coal Innovation Australia
 Calera Corporation
 Calix Limited
 Canadian Clean Power Coalition
 CanSyd Australia Pty Ltd
 Carbon Capture and Storage Association
 Carbon Capture and Storage Research Consortium Nova Scotia
 Carbon Capture Scientific
 Carbon Counts
 Carbon Management Canada Inc
 Cardiff University
 CCS Alliance
 CCS TLM
 CE.Si.S.P (Interuniversity Centre for the Development of Product Sustainability)
 Center for Low Carbon Society Strategy (also known as Low Carbon Society Japan)
 Centre for Research and Technology Hellas - Solid Fuels Technology & Applications
 CGGVeritas
 CH2M Hill Australia Pty Ltd
 Chartis International
 Chevron Australia Pty Ltd
 China Huaneng Group
 China Petroleum & Chemical Corporation (SINOPEC)
 China Steel Corporation
 China University of Petroleum-Beijing
 Chiyoda Corporation
 Chugai Technos Corporation
 Clean Air Taskforce
 Clean Energy Systems, Inc.
 CNPC Research Institute of Safety and Environmental Technology (RISE)
 CO2 Capture Project Phase 3 (CCP3)
 CO2 Solutions Inc.
 CO2 Technology Centre Mongstad (TCM)
 CO2GeoNet - The European Network of Excellence on Geological Storage of CO2
 CO2Sense Ltd
 Coal Utilization Research Council
 Colborne Consulting Inc. (CCI)
 Commonwealth Scientific and Industrial Research Organisation (CSIRO)
 ConocoPhillips
 Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC)
 CPC Corporation - Exploration and Development Research Institute
 Daewoo Shipbuilding & Marine Engineering Co. Ltd
 Datang International Power Generation Co., Ltd.
 Deltalinqs
 demos EUROPA
 Det Norske Veritas AS
 Deutsche Bank Asset Management
 Dia Consultants Co., Ltd
 Doosan Babcock Energy Limited
 Dow Chemical Company
 Drax Power Limited
 Duke Energy
 E.ON SE
 Ecofin Research Foundation
 Ecofys Netherlands BV
 EcoSecurities International Ltd
 Elcogas, S.A
 Electric Power Research Institute (EPRI)
 Électricité de France (EDF) DPIT
 Electricity Supply Board
 Emerson Process Management Flow B.V.
 Enagás SA
 Enbridge Inc.
 ENEA Consulting
 ENEL S.p.A.
 Energy Research Centre of the Netherlands (ECN)
 Energy Valley Foundation
 Engineering Advancement Association of Japan (ENAA)
 Enhance Energy Inc.

ENINVEST S.A	Industrial Technology Research Institute (ITRI)
EnTech Strategies LLC	Infrastructure Partnerships Australia
Entergy Services Incorporated	InnoSeptra
Enviro-Energy International Holdings Ltd	INPEX Corporation
ERM Ltd	Institute for Studies and Power Engineering for Romania
Ernst & Young	Institute of Rock and Soil Mechanics, Chinese Academy of Sciences (IRSM)
Eskom Holdings (SOC) Ltd.	Integrated Carbon Sequestration Pty Ltd
Exergen Pty Ltd	Integrated CO2 Network (ICO2N)
ExxonMobil Australia Pty Ltd	Interkonsult Limited
Fluor Ltd	International Aluminium Institute (IAI)
Fortum Oyj	Inventys Thermal Technologies Inc.
Frazer-Nash Consultancy	ION Engineering
Freshfields Bruckhaus Deringer LLP	IPIECA - International Petroleum Industry Environmental Conservation Association
Frommer Lawrence & Haug LLP	Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA)
Fujifilm Corporation	Jacobs Consultancy
Fundación Ciudad de la Energía (Ciuden)	Japan Bank for International Cooperation (JBIC)
FutureGen Industrial Alliance Inc	Japan CCS Company Limited
Gassnova SF	Japan Coal Energy Center (JCOAL)
GDF SUEZ S.A.	Japan NUS Co. Ltd (JANUS)
General Electric International Inc	Japan Oil, Gas and Metals National Corporation
Geogreen	JGC Corporation
Geological Storage Consultants LLC	JPMorgan Chase & Co.
Geological Survey of Ireland (GRI)	Jupiter Oxygen Corporation
George Fischer Pty Ltd	Kajima Corporation
Główny Instytut Górnictwa	Kawasaki Heavy Industries Ltd
Golder Associates Pty Ltd	K-Coal Co., Ltd
Halliburton	Korea Advanced Institute of Science & Technology (KAIST)
Hatch Associates Pty Ltd	Korea Carbon Capture and Sequestration R&D Center
Hess Corporation	Korea CCS Association (KCCSA)
Hi-Gen Power Ltd	Korea Electric Power Corporation (KEPCO)
Honeywell Ltd	Korea Institute of Energy Research
Howden Group Limited	Korea Ocean Research and Development Institute (KORDI)
HTC Pureenergy Inc	
Huazhong University of Science and Technology (HUST-ICCUS)	
IBM Australia Ltd	
IEA Greenhouse Gas R & D Programme	
IFP Energies nouvelles	
IHI Corporation	

Korean Institute for Advanced Engineering	Nottingham Centre for Carbon Capture and Storage (NCCCS)
KPMG	NTT Data CCS Corporation
Kyoto University	NTT Data Institute of Management Consulting Inc
Kyushu University	Oceaneering Services Australia Pty Ltd
L.E.K Consulting Pty Ltd	Oil Resources and Allied Investment Ltd
Latin American Thematic Network for the CO2 Capture and Storage	Orkuveita Reykjavíkur (Reykjavik Energy)
Latrobe City Council	Oxand S.A
Lawrence Livermore National Laboratory	Oxyfuel Technologies Pty Ltd
Liberty Resources Limited	Parsons Brinckerhoff Australia Pty Ltd
Lloyd's Register	Peabody Energy Australia Pty Limited
Long O Donnell Associates Ltd	Peel Energy Limited
M.E.T.T.S. Pty Ltd	Perdaman Chemicals and Fertilisers Pty Ltd
Macquarie Global Investments	Petroleum Technology Research Centre Inc.
Maersk Olie og Gas AS	Petrophysics Institute Foundation (IPf)
Marubeni Corporation	Polish Geological Institute - NRI
Mesa Photonics, LLC	POSCO Engineering & Construction Co. Ltd
Mitsubishi Corporation	Powerspan Management Company LLC
Mitsubishi Heavy Industries Ltd. (MHI)	Poyry Energy Consulting
Mitsui & Co. Ltd.	Praxair Inc
Mizuho Information & Research Institute, Inc.	PricewaterhouseCoopers
Motilal Nehru National Institute of Technology	Process Group Pty Ltd
Mott MacDonald Group Ltd.	Process Systems Enterprise Ltd
National Energy (Experiment) Research Centre of CCUS, RIPED, CNPC, China (NERC)	Quality Energetics JSC
National Grid	Quintessa Limited (UK)
National Institute of Advanced Industrial Science and Technology (AIST)	Quintessa Limited K.K (Japan)
National Institute of Marine Geology and Geocology	Ramgen Power Systems
National Physical Laboratory (Centre for Carbon Management)	Reed Smith LLP
Nature Research Centre of Lithuania	Register Larkin Ltd
NextPotential Group	Reliance Power Ltd
New Energy and Industrial Technology Development Organisation (NEDO)	REPOWER ENERGIA ITALIA S.p.A
NEWJEC Inc.	Research Institute of Industrial Science and Technology (RIST)
Nippon Steel & Sumikin Engineering Co. Ltd	Research Institute of Innovative Technology for the Earth (RITE)
North West Redwater Partnership	ResourcesLaw International Associates Pty Ltd
Norton Rose Fulbright	Rio Tinto Limited
Norwest Corporation	ROAD Project (Maasvlakte CCS Project C.V)
	Rolls-Royce PLC

Rotterdam Climate Initiative	Tees Valley Unlimited
RPS Group plc	Tele-Rilevamento Europa - T.R.E srl
RWE Power AG	Tel-Tek
Samsung Techwin Co. Ltd	Tenaska Inc
Santos Limited	TERRA 3E SAS
Sargas AS	Texas Carbon Capture and Storage Association
Sasebo Heavy Industries Co., Ltd	The Carbon Sequestration Council
SaskPower CCS Initiatives	The Climate Group
Sasol New Energy Holdings (Pty) Ltd	The Clinton Foundation
Scottish Carbon Capture and Storage	The Commonwealth of Australia
Scottish Enterprise	The Crown Estate
Scottish European Green Energy Centre	The Emirate of Abu Dhabi - Masdar
Senergy Alternative Energy Ltd	The Federal Republic of Germany
Seoul National University	The General Environmental Technos Co., Ltd. (Kanso Technos)
Services Petroliers Schlumberger	The Government of Alberta
SGS Group Management Ltd	The Government of Canada (Natural Resources Canada)
Shaanxi Yanchang Petroleum (Group) Corp., Ltd. (Yanchang Petroleum Group)	The Government of Egypt
Shell International Petroleum Company Limited	The Government of India (NTPC Limited)
Siemens Australia Ltd	The Government of Indonesia
Societe Generale	The Government of Italy
Sojitz Corporation	The Government of Japan (METI)
Solid Energy New Zealand Limited	The Government of Malaysia
Solvay S.A.	The Government of Mexico
South African National Energy Research Institute (SANERI)	The Government of Netherlands
Southern States Energy Board	The Government of New Zealand
SSE Generation	The Government of Norway
Standard Chartered Bank	The Government of Papua New Guinea
Stanwell Corporation Ltd	The Government of Romania
Statoil, ASA	The Government of Saskatchewan
Sumitomo Corporation	The Government of Scotland
Summit Power Group	The Government of South Africa
Synthetic Fuels Australia	The Government of Spain
Taisei Corporation	The Government of Sweden
Taiwan Power Company	The Government of the French Republic
Tata Quality Management Services (TQMS)	The Government of the People's Republic of China as Represented by the National Development and Reform Commission (NDRC)
Technip	The Government of the Republic of Bulgaria
Technovation Partners Co. Ltd	

The Government of the Republic of Korea
The Government of the Republic of Trinidad & Tobago
The Government of the United Kingdom
The Government of the United States of America
The Institute of Applied Energy
The Institute of Energy Economics, Japan (IEEJ)
The Kingdom of Saudi Arabia
The Rhead Group
The Russian Federation
The State Government of New South Wales
The State Government of Queensland
The State Government of South Australia
The State Government of Victoria
The State Government of Western Australia
TNO Consulting
Tokyo Institute of Technology
Toshiba Corporation
Total S.A.
Toyo Engineering Corporation
Toyota Motor Corporation
TransAlta Corporation
TRUenergy Development Pty Ltd
Tuev Sued Industry Services
Tunisian Government
UCG Association
Uhde Shedden Australia Pty Ltd
UK Carbon Capture and Storage Research Centre (UKCCSRC)
Union Engineering Oil & Gas
United States Energy Association (USEA)
University College London
University of Ballarat
University of Leeds (Low Carbon Combustion Centre)
University of Mining and Geology of Bulgaria
University of Tokyo
US Carbon Sequestration Council (USCSC)
Vattenfall AB

Vattenfall Europe
WDS Limited
Woodside Energy Ltd
World Coal Association
World Petroleum Council
World Steel Association
Worley Parsons Services Pty Ltd
Xstrata Coal Pty Ltd
Yonsei University
ZEEP
ZERO - Zero Emission Resource Organisation
Zero Emission Development Institute

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International Energy Agency
International Energy Forum
OPEC
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