

SAVE \$250

If you book
3 persons
or more

Carbon Capture, Utilisation and Storage (CCUS)

Master the technology pathways, its business drivers, economics and deployment strategies

LIVE ONLINE COURSE OVER 4 SESSIONS

Commences: 6 November 2024

Course Sessions

1. Carbon sources & capture technologies
2. Carbon storage, transport & utilisation
3. Hydrogen, carbon and industrial clusters
4. Growing CCUS: scalability, markets, policies & strategies

Benefits of Attending

- Understand the most challenging aspects of the clean energy transition & the role of CCUS in addressing them
- Examine the various technological aspects of the CCUS value chain, from capture through to storage and/or utilisation pathways
- Discuss the key economic and policy variables which will determine how CCUS plays out in different markets
- Review up-to-date examples of projects and strategies from around the world, and evaluate the lessons from them
- Learn the dynamics of the new competitive environment, including the risks of 'business as usual' and the importance of industrial clusters in CCUS deployment
- Identify approaches to sustainable strategic planning and new business opportunity assessment



Online Course at a Glance



The online course will be delivered in 4 live interactive sessions. Each session will be 3 hours, including a 10-minute break. The live online course is powered by Zoom, which can be accessed via laptops, desktops or mobile devices. Please refer to page 4 for more details.

COURSE OVERVIEW

This course is intended for those in business, commercial and strategically focused roles within the energy sector; in particular those responsible for environmental matters, business sustainability and business transformation in areas such as oil & gas, hydrogen and industrial energy usage.

You will leave with a clearly explained and independent perspective on how, where and why CCUS is happening now and could grow in future – covering the range of technological solutions and business drivers, including policy. In addition to reviewing existing CCUS approaches, the course will highlight new opportunities and integrated value creation possibilities through emerging carbon utilisation options. This will include how the fate of carbon capture links to other aspects of the clean energy transition, such as clean hydrogen production, industrial decarbonisation and the transition away from oil & gas.



YOUR EXPERT COURSE DIRECTOR

A respected energy business analyst, consultant and energy communicator with over 25 years' commercial experience. He focuses on the interconnected clean energy transition topics of renewable power, energy storage, energy system electrification and clean hydrogen and also on the impacts of clean energy technologies on power systems and associated value chains, helping companies to understand and explore new business opportunities and to plan for success when developing them.

By focusing on the interconnection of multiple business variables within energy and technology markets, he has helped senior business-people in **over 30 countries across 5 continents**. He helps energy investors, product innovators, project developers, policymakers and others to navigate the opportunities and threats created in the transition to cleaner, "smarter" and more connected power systems. He also delivers training on a global basis.

He has an outstanding academic background, including a 1st Class honours degree in Natural Sciences from the University of Cambridge, a PhD in Earth Sciences and further Diplomas in Economics & Sustainability.

WHO HAVE ATTENDED

ABB • Alstom • Bangkok Cogeneration • BNP Paribas • BP • Canadian Solar • Danish Energy Agency • Dept. Trade & Industry South Africa • EDF • Electricity and Cogeneration Regulatory Authority of Saudi Arabia • Energy Commission of Malaysia • Eskom • European Investment Bank • GE • GIZ • Hawaiian Electric Co. • HSBC • Indonesia Investment • Japan Bank • K-Green • Lightsource • Malaysian Green Technology Corporation • Ministry of Economic Affairs (Netherlands) • Munich Re • Ontario Power Generation • OPIC • Qatar Petroleum • Saudi Aramco • Schneider Electric • Siemens • Singapore Power • Statkraft • The World Bank • Total • US Dept. of Energy • Willis Group

TESTIMONIALS

"This course has provided me a good understanding and cleared all false expectations about CCUS and of its cross entanglement to hydrogen sector and the importance of both for decarbonising the world's (or part of the world's) economy."

- Acquisitions Manager, Solar Clear

"Very interesting course with lots of up to date numbers and project examples."

- Project Manager, Fluxys

"Very engaging and informative presenter. I found the course to be full of useful, up to date examples which are highly valuable."

- Solicitor, CGG Services

"Excellent material. Very interactive with additional materials. Good response to questions and good interaction with the audience."

- Manager, Longreach Capital Investment

COURSE CERTIFICATE

Upon the successful completion of this course, you will receive a Certificate of Attendance to testify your endeavour and serve towards your professional advancement.

IN HOUSE TRAINING (SAVE UP TO 40%)

Interested in this course for a group of at least 15 people? Contact Ms. Jessie Ang on +65 6325 0218 or email jessie@infocusinternational.com

Programme Schedule (GMT+0)

Applicable to all 4 sessions

07:00 am	Session starts
08:30-08:40 am	Break
10:00 am	End of session

THE ADVANTAGES OF LIVE ONLINE LEARNING

Until now if you wanted to experience one of Infocus International's world leading courses, you would either have to travel to the training location, or your organisation would sponsor an in-house training programme. Now, regardless of your geographical location, you can experience the same level of quality as a public or in-house course and learn from office, home or even on the move. There's also the huge savings of cost and time by not having to travel to the training location.

We all face more pressure in our business lives. Finding time to attend courses can prove very difficult and plans are too often put aside. If you've had to put training on the back burner due to other commitments, our online learning course is what you've been waiting for.

Through live online learning you can enjoy the full benefits whilst minimising disruption to your professional commitments. The course is accessed online, giving you the flexibility and freedom to participate from anywhere in the world as long as internet access is available.

If you miss out a session or two, you can access the playback video recording available up to a week after the live session.

ABOUT THE ORGANISER

Infocus International is a global business intelligence provider of strategic information and professional services. We provide worldwide participants with intensive technical training programmes designed to help them succeed on the global stage.

Our ever-expanding portfolio of face-to-face courses, conferences, and live online courses range in complexity from introductory programmes for new market entrants, through to the most complex subjects in the industry.

SESSION 1 6 November 2024, 7am – 10am GMT+0

Carbon Sources & Capture Technologies

This first session provides an essential contextual review and quantification of where carbon emissions are focused. You will then receive a comprehensive review and terminology-buster covering the various technological pathways towards carbon capture, their state of readiness and examples of their deployments on the ground and/or in planning.

What are the key barriers to carbon capture, how might they be overcome, and which pathways are likely to advance at the greatest pace?

The numbers and trends around emitted and captured carbon dioxide

- Carbon emissions: reviewing the numbers, identifying the key emitters
- Where is carbon capture already happening, and why?
- Visible trends in the emerging and future application of carbon capture
- Factors driving the business case for carbon capture

Understanding carbon capture technologies

- Demystify carbon capture technologies: solvents, sorbents, membranes and more
- Understand the importance of carbon dioxide 'partial pressure' (for carbon capture economics)
- Post vs. pre-combustion carbon capture
- Energy use in carbon capture
- Review operational examples, including in coal (e.g. Boundary Dam), gas processing (e.g. Chevron) & ammonia (e.g. Coffeyville)
- Negative emissions technologies (NETs): Direct air carbon capture (DACC) & Bioenergy with carbon capture (BECCS)
- Examine selected pilot and planned projects, for example: La Porte (US), Drax (UK), Orca (Iceland)

SESSION 2 7 November 2024, 7am – 10am GMT+0

Carbon Storage, Transport & Utilisation

Capture is only the first stage of a challenging and lengthy supply chain in ensuring carbon stays out of the atmosphere. This session focuses firstly on the options for permanent underground sequestration of captured carbon dioxide, and the available methods of transporting it to those locations.

Secondly, you will learn about the alternative to storing carbon: using it. *How is captured carbon currently utilised and which other uses are under development or consideration?*

Understanding carbon dioxide storage & transport

- Identify the requirements for a carbon storage resource
- Mechanisms and pros/cons of storage in saline aquifers vs. depleted hydrocarbon fields
- Review contrasting examples, including: Sleipner (Norway), Ravenna (Italy)
- Emerging innovations in mineralisation (in both carbon storage and utilisation)
- Post-storage monitoring, including leakage risks and mitigations
- Transporting carbon: the options and infrastructure requirements
- Carbon dioxide in pipelines (example: the Alberta Carbon Trunk Line) vs. carbon dioxide by ship (example: the Northern Lights project)

Carbon utilisation

- Business and economic drivers, including the carbon product 'value pyramid'
- What are the net decarbonisation benefits of carbon utilisation, when compared to storage?
- Current CO₂ utilisation, including examples from sectors such as food & chemicals
- Captured carbon as a feedstock into 'low carbon' petrochemicals such as methanol and synthetic fuels (project examples including: Westküste, Germany & Haru Oni, Chile)
- Carbon utilisation and the 'circular economy'

SESSION 3 12 November 2024, 7am – 10am GMT+0

Hydrogen, Carbon & Industrial Clusters

The fate of CCUS may, in many regions, be strongly linked to that of another trending topic in the road to decarbonisation: clean hydrogen. Linkages between the two topics are particularly evident in three key areas: hydrogen production, carbon utilisation and industrial decarbonisation.

This session focuses on the synergies between clean hydrogen and CCS across all three of these topics. *Can each exist without the other, or will the co-location of carbon and hydrogen value chains prove to be a key economic foundation for both?*

Blue hydrogen production

- Routes to low carbon hydrogen production from hydrocarbons (including the carbon emission footprints of 'grey', 'blue', turquoise' and 'orange')
- A deeper dive into hydrogen production technology and its integration with carbon capture
- Blue hydrogen projects, including their context and timeframes (examples: Saltend, UK & Great Plains, US)
- Understand competition within the hydrogen production sector (and the implications for CCUS)
- Process synergies between hydrogen production and carbon utilisation

Industrial decarbonisation pathways and clusters

- Evaluate the importance of industrial clusters in emissions reduction (example: the world's first national 'Industrial Decarbonisation Strategy', UK)
- The market applications of clean hydrogen and CCS in industrial decarbonisation (examples including refining, ammonia, steel, cement and more)
- Geographic influences on CCUS deliverability and deployment: what are the practical barriers?
- Identify the typical features of industrial clusters, and their advantages in achieving scale
- Review industrial clusters, their decarbonisation strategies and project announcements (examples including: HyNet, UK; Rotterdam, Netherlands; Latrobe Valley, Australia)

SESSION 4 13 November 2024, 7am – 10am GMT+0

Growing CCUS: Scalability, Markets, Policies & Strategies

The concepts of CCUS are not new and have been discussed for many years. Yet CCUS has never taken off on a scale that many once hoped.

What is different now and why is CCUS back at centre stage within energy transition discussions? Who is likely to drive new CCUS deployment and where are these projects most likely to happen? What are the risks that could make this another false dawn?

Policy drivers & influences on CCUS

- Business models and barriers to investment in CCUS
- CCUS vs. other paths in energy transition (Wind, Solar, Hydrogen, etc.)
- CCUS in 'net-zero' scenarios and models (from examples including: the IEA, Shell Scenarios, IPCC)
- Global, regional & national policy approaches to CCUS
- Carbon pricing and carbon markets: global contrasts
- Local drivers for CCUS: the wider 'economy' and 'industrial strategy' considerations

Strategic & business model drivers for CCUS growth

- Oil & gas industry targets and 'scopes' (examining IOC commitments)
- Thermal power generation utilities and CCUS: stranded asset risks
- Infrastructure: questions of build vs. re-purpose, and ownership models
- How to approach risk and opportunity mapping for CCUS
- CCUS project development: planning, permitting & operational requirements
- Summary: where will CCUS happen (and where won't it)?

WHAT EQUIPMENT DO I NEED?

- A laptop / desktop PC / tablet / mobile phone
- Internet connection – wired or wireless broadband
- Speaker and microphone
- Webcam

HOW DOES IT WORK?

A unique meeting ID and password will be provided to the participants to enter Zoom virtual meeting room and to take part in the interactive live course. You can choose to download the Zoom software, or simply access via web browser. Ask live questions or utilise Chat feature to interact with the trainer and fellow participants. You can also use Whiteboard and Screen Sharing features. Just like in a physical workshop, Whiteboard allows trainer and all participants to write on a blank screen for everyone to see. Our event coordinator will be there to guide you if you need any assistance.

WHAT IF I MISSED A SESSION?

Participants who miss a session may contact our dedicated course coordinator to request the video recording, which is available up to one week after each session. Note that the video will not be downloadable.

WHO WILL BENEFIT?

- Oil & Gas
- Power & utilities, IPPs
- Petrochemical and process industry
- Government officials and regulators
- Project developers and sponsors
- Private equity & institutional investors
- Development finance institutions and commercial lenders
- Sustainability / ESG / Environment advisors

Carbon Capture, Utilisation & Storage

LIVE ONLINE COURSE OVER 4 SESSIONS

Commences: 6 November 2024

DELEGATE DETAILS

1 Full Name Mr/Ms _____

Job Title _____

Tel/Mob _____

Email _____

2 Full Name Mr/Ms _____

Job Title _____

Tel/Mob _____

Email _____

3 Full Name Mr/Ms _____

Job Title _____

Tel/Mob _____

Email _____

4 Full Name Mr/Ms _____

Job Title _____

Tel/Mob _____

Email _____

5 Full Name Mr/Ms _____

Job Title _____

Tel/Mob _____

Email _____

6 Full Name Mr/Ms _____

Job Title _____

Tel/Mob _____

Email _____

ORGANISATION DETAILS

Company _____

Address _____

AUTHORISATION

Full Name Mr/Ms _____

Job Title _____

Email _____

Signature _____

Registration & Enquiries

Infocus International Group Pte Ltd
143 Cecil Street #25-02, Singapore 069542

Contact : Ms. Jessie Ang
Tel : (65) 6325 0218
Main : (65) 6325 0210
Email : jessie@infocusinternational.com
Web : www.infocusinternational.com/ccus

YOUR INVESTMENT

	For 1 or 2 persons	For 3 persons or more
FEE PER PERSON	USD 2,250	USD 2,000

PAYMENT METHOD

Payment is required within 5 working days upon receipt of invoice.

By Credit Card: VISA MasterCard American Express

Note that the credit card will be charged in Singapore Dollar currency (SGD). We will quote the SGD amount and send credit card payment instruction prior to the charge.

By Telegraphic Transfer (USD)

Account name: Infocus International Group Pte Ltd
Account number (USD): 017-025866-1
Swift code: SCBSLG22
Bank name: Standard Chartered Bank
Bank address: 6 Battery Road, #01-01, Singapore 049909

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LNG: Supply, Demand, Pricing and Trading
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www.infocusinternational.com/public-courses

CANCELLATION POLICY

Should you be unable to attend, a substitute delegate is welcome at no extra charge. If this is not suitable, cancellations must be made in writing (letter or fax) at least 30 days before the program commences. A full refund less an administration charge of 10% will be given. Registrations cancelled less than 30 days before the event must be paid in full and a credit voucher equivalent to the full amount will be issued for you to attend any Infocus International Group events for up to 18 months. Credit vouchers will not be issued for no-shows without cancellation. Infocus International Group will provide full course documentation to a delegate who has paid, but is unable to attend. Infocus International Group reserves the right to change the content of the program without notice including the substitution, alteration or cancellation of speakers and/or topics and/or the alteration of the dates of the event. Infocus International Group is not responsible for any loss or damage as a result of a substitution, alternation, postponement or cancellation of an event under any circumstances.