Welcome to the 'CCUS for Net-Zero' seminars, hosted by UKCCSRC

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Please note: all presentations (not the Q&As) will be recorded as a resource for use on our website.

The UKCCSRC is supported by the Engineering and Physical Sciences Research Council (EPSRC) and part of the UK Research and Innovation (UKRI) Energy programme

UK GOVERNMENT CCUS CONFERENCE

Bankability of CCUS

THE FUTURE IS YOU

SOCIETE GENERALE

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SOCIETE GENERALE – LEADER IN STRUCTURED FINANCE AND CCUS

1	Extensive global **track record** as a financial advisor, but also a leading MLA in the project debt market which gives us detailed current market knowledge (bank risk appetite, liquidity, leading edge structures etc) to inform our FA roles
2	A **reputation for innovation** in technology (e.g. floating offshore wind and solar, integrated REN + storage), structures (corporate PPAs, merchant) and financing (hybrid bank/institutional structures, IJV/UJVs, bonds, mini-perms)
3	Successful track record of bid advisory and bid optimisation covering CfD-type auction processes and acquisitions in Europe. Direct experience of developing financing solutions for first of a kind projects and new markets
4	EMEA advisory and project finance team comprises over 40 experienced professionals, most of whom have financial advisory experience, supported by experienced hedging, ECA, DCM & other specialists
5	SG has been **active in the CCUS for more than 10 years** and has advised on a number of major projects during this period, as well as supporting the development of regulatory frameworks in the UK and elsewhere

IJGlobal Awards 2020
Global MLA of the Year
2020

PFI AWARDS 2019
Bank of the Year Europe
2020

The Banker Investment Banking Awards 2019
Most Innovative Investment Bank in Infrastructure & Project Finance
2019

PFI AWARDS 2018
Global Advisor of the Year
2018

PFI AWARDS 2017
Bank of the Year Europe
2017

PFI AWARDS 2016
Global Advisor of the Year
2016

Net Zero Teesside	CAPTURE POWER	Masdar (A MUBADALA COMPANY)	TEESSIDE COLLECTIVE (A NEW INDUSTRIAL FUTURE FOR THE UK)	hydrogen energy california
Gas-fired power project with integrated carbon capture, transport and storage	**White Rose CCS** Oxy-combustion CCS project with integrated transport and storage	**Abu Dhabi CCUS** Development of a multi-emitter CCUS project in Abu Dhabi including use of CO2 for EOR	**Teesside Industrial CCUS** Development of a tariff mechanism to facilitate the development of a CCS hub in Teesside	**Hydrogen Energy California** Development of a 405 MW Integrated Gasification & Combined Cycle project with CCS for production of power, fertiliser, and the CO2 for enhanced oil recovery
GBP confidential	**GBP CONFIDENTIAL**	**GBP confidential**	**GBP confidential**	**USD confidential**
Financial Advisor Bankability Phase	Financial Advisor	**Financial Advisor**	**Financial Advisor**	**Financial Advisor**
2020 **UK**	2017 UK	2011 UK	2015 UK	2011 USA

Policy related experience with UK Department of Energy and other bodies, including:

- ✓ **CCUS Council member**
- ✓ **Commercial lead (Finance & Risk) for the UK CCS Cost Reduction Task Force**
- ✓ **Member of the CCS Commercial Development Group**

SOCIETE GENERALE

CONFIDENTIAL

LONG AND BUMPY JOURNEY FOR CCUS

CCUS has seem many false dawns, most recently the failed UK commercialisation competition - the finance community have been sceptical we now have the foundations for success

Carried forward benefit from the work previously done

- A clear risk allocation emerged from the commercialisation competition
- Significant market testing leading to identification of so-called “irreducible” risks
- Increased focus on strategic development of the industry

“Demonstration” to implementation

- Previous focus was on demonstrating the technology rather than developing an industry
- Lack of a long term vision and coherent approach
- Mixed results from operating projects –Gorgon, Kemper, Boundary Dam, Petranova

The finance community

- Genuine enthusiasm for the CCUS industry but lacked clarity on the role of CCUS
- <u>Exposure of the finance community to the CCS Competition failure was very damaging</u>
- One of the most significant risk considered to be political / regulatory

Uncertainty left CCUS close to the “too difficult” box for many financial institutions

FINANCE COMMUNITY VIEW ON CCUS NOW

- Imperative to meet net zero targets and clear necessity for CCUS to be part of the solution have transformed the interest of the finance community – sense of scale and direction
- The UK cluster approach, supporting business models and projects emerging in the clusters has further galvanised interest, particularly given the sponsors involved in many of the projects
- However, interest does not equate to understanding, so mobilising finance will still require stakeholder cooperation, education and careful structuring
- The finance community have begun to understand CCS risk but have not had the

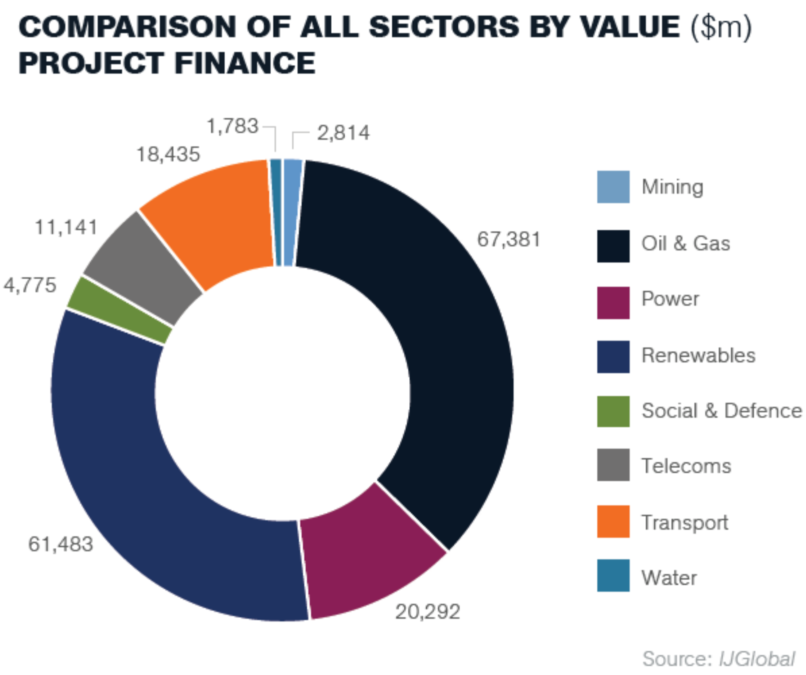
Potential Deal Breakers Risk that financial institutions are currently not willing to take or which may not be adequately mitigated by normal commercial damages/insurance	*Potential Road Blocks* Risk that financial institutions may not be able to take or for which financial and/or structural mitigation may be significantly outside normal boundaries	*We don't know what we don't know* "We will deal with that in Due Diligence"
Storage Risk: Depends on jurisdiction and project structure – liability issue **Technology Failure**: "White Elephant risk" **Change in Law/Regulation**: Demonstration projects are perceived as more exposed	**Storage Risk**: Potential for storage underperformance leading to outage / rework – cost and delay issue **Technology Performance**: underperformance of CCS technology – impact on project economics **Integration Risk**: depends on commercial structure but outage of one component impacts the chain **Long Term Viability**: Impact of equipment or performance degradation over time – increased costs **Transient Equity**: Sponsors demonstrating technology may not want to be long term equity	**Due Diligence**: In any "first-of-a-kind" project many issues will be resolved during DD **Emerging Issues**: Clear expectation that issues could emerge as demonstration projects executed **Kick the Can**: Financial institutions will not address key issues until they have a project to evaluate

Using proven technology could be a key risk mitigant for the financing

WILL FINANCING BE AVAILABLE FOR CCUS?

No shortage of liquidity for clean energy projects ……..

- **Commercial (Project Finance) Banks:**
  - Experienced in risk analysis, financing complex projects and active in sectors where CCS is applicable
  - Huge global liquidity for clean energy projects as financial institutions are also transitioning
  - Willingness to finance new sectors – if the risk allocation is acceptable
- **Export Credit Agencies (ECAs):**
  - Risk enhancement helps to increase liquidity
  - Involvement will be based on national interest
  - Already showing significant interest
- **Multilaterals:**
  - Strategic role in development of clean energy
  - New UK-IB could have a critical role to play
- **Other sources:**
  - Green Bonds/Capital markets – reluctant to take new technology risk – can be more risk averse than PF
  - Scope for credit enhancement – UK-IB



Figures for H1, 2021

ENGAGING WITH BANKS

Financial institutions will go through several phases to a greater of lesser extent.....

- **Identification:**
  - Institutions have to identify CCUS as an opportunity
  - Undertake high level research & due diligence on the sector
- **Education:**
  - Undertake more extensive due diligence on market and opportunity
  - Prepare a business case for inclusion in strategy
  - Internal education process
- **Buy-in:**
  - Internal management support for dedicating resource to the sector
  - In principle support to lend to the sector
- **Execution:**
  - Detailed assessment and structuring of an actual transaction
  - Full management and credit approval

Understanding and fully supporting this process is essential to create liquidity

VERY POSITIVE DEVELOPMENTS FOR UK CCUS BANKABILITY

Recent developments in the UK and elsewhere have provided positive direction on some of the key concerns of the finance community

- **Where does CCUS fit into overall energy policy?**
  - Emergence of net zero targets and the inability to meet these without CCUS has reinvigorated CCUS
  - Policy now seems to be taking a much more integrated approach to deliver net zero with <u>the role of CCUS clearly defined</u>
  - The strategy for deploying CCUS is looking to the longer term decarbonization goals
- **Enabling Environment**:
  - UK CCUS business models appear to address the key risk allocation issues and create a bankable structure
  - Selection process for pathfinder projects is not ideal but should hopefully lead to development of core infrastructure to underpin an industry
- **Credible sponsor involvement**:
  - Clear interest of major energy companies in being core developers of the industry
  - Now driven by their own imperative to transform their businesses – clear rationale for involvement
  - Many are key relationship clients of the banks expected to finance the sector so will draw capital in
- **<u>Devil is in the detail:</u>**
  - Still a long way to go to convert good intentions into bankable project contracts
  - **We see negotiating risk as one of the key risks facing the industry in terms of delay and delivery**

PROJECT FINANCE FOR CCUS IN 2021

Full non-recourse financing - just not in the UK ……..

Overview of the transaction

Confidential

CCUS Project Financing

Confidential

Joint Lead Arranger, Lender, LC Issuing Bank

ONGOING UNITED STATES

- Carbon capture from a bio-ethanol plant to reduce the carbon intensity of product being produced to meet US Low Carbon Fuels regime
- Estimated capture and sequestration of 628,000 metric tons of CO_2 per year
- CO_2 will be transported by pipeline and used for Enhanced Oil Recovery activities
- Risk mitigation includes employing commercially-proven CO_2 purification and liquefaction technology, a highly qualified and experienced contractor on a lump-sum, turnkey basis and back-to-back feedstock and offtake agreements based on a minimum volume commitment with no price or volume risk

Confidential

Gas-to-Green Gasoline & CCS Project

Confidential

Debt Financial Advisor

ONGOING UNITED STATES

- First-of-a-kind methane-to-green gasoline project - 62,000 bpd of gasoline (first phase) with approx. 50% less CO_2 than conventional refinery gasoline along with hydrogen and LPG sales
- CCS is an integral part of strategy to reduce CO_2 emissions (expected to reduce CO_2 emissions by over 12 mmtp/y)
- Risk mitigation includes use of licensed process technology (with in-service references, a fixed price EPC Contract, including guarantees, with a reputable, credible contractor and a portfolio of oil-indexed feedstock gas contracts and offtake agreements with IG-rated counterparties with minimum commodity price exposure

This can only help the bankability of CCUS but will not necessarily transfer as precedent for the UK

SIGNIFICANT REGIONAL DIFFERENCES IN CCUS LANDSCAPE

Why will we finance in the US first and on a different risk allocation ……..

- **US is Carbon Capture, <u>use & storage</u>: CO_2 is a valuable commodity with a market price**
  - Established infrastructure and market for CO_2 – traded commodity
  - Contractual precedent and risk allocation to underpin the industry
  - Now supported with a clean energy tax incentive for sequestered carbon

- **Europe is Carbon Capture X use & <u>Storage</u>: CO_2 is a liability**
  - No pre-existing CO_2 distribution infrastructure – has to be established which has risk/cost implications (some opportunity to use existing O&G infrastructure – e.g. pipes)
  - No pre-existing EOR industry as anchor buyer for CO_2 – potential for the future?
  - Exposure to unquantifiable penalties for leakage of CO_2

Underlying risk is different:

➢ ***Leakage risk***: In the US the risk is losing the tax incentive on carbon not sequestered rather than penalties at the EU-ETS price for carbon leakage

➢ ***Existing infrastructure in the US:*** adding a known process to extract CO_2 which can be transferred to an existing infrastructure

Precedent for the UK ?

Possibly, but the risk allocation is very different

CONCLUSION

UK now stands on the verge of developing a market leading CCUS industry ……..

UK Net Zero Target provides strong rationale for CCUS development

- Now evident that CCUS is central to meeting climate change goals
- Linked also to hydrogen, a second key decarbonisation vector

Policy incorporates CCUS

- Rather than being an option, CCUS is now perceived as central to UK decarbonisation policy
- Defined targets for volume of CO_2 to be captured help reinforce the impression of commitment

Long term strategy

- We are no longer talking about demonstration projects but an industry
- The focus is on clusters and decarbonisation of regions rather than single projects

Business models

- The CFD for capture and a regulated model for transport & storage is positive
- The high-level principles proposed could address some of the key risks that have dogged the industry

UK CCS could be bankable if the models can be converted to suitable contracts