



IEAGHG Update to CSLF

Tim Dixon
IEA GHG R&D Programme
CSLF Technical Group, 16 June 2015

IEA Greenhouse Gas R&D Programme (IEAGHG)



- A collaborative international research programme founded in 1991
- Aim: To provide information on the role that technology can play in reducing greenhouse gas emissions from use of fossil fuels.
- Focus is on Carbon Dioxide Capture and Storage (CCS)
- Producing information that is:
 - ✓ Objective, trustworthy, independent
 - ✓ Policy relevant but NOT policy prescriptive
 - ✓ Reviewed by external Expert Reviewers

IEAGHG



- Flagship activities:
- **Technical Studies** >250 reports published on all aspects of CCS
- **International Research Networks**
 - Risk Assessment/Management
 - Monitoring
 - Modelling
 - Environmental Research
 - Social Research
 - Oxy-combustion
 - Post-combustion Capture
 - Solid Looping
- **GHGT conferences** – GHGT-13, Lausanne, Switzerland, 13-18 Nov 2016

IEAGHG



- Other activities include:
- International CCS Summer Schools - **2015 Perth, Australia, 6-11 Dec 2015**; 2016 Mexico tbc
- Peer reviews, eg **US DOE**, US EPA; CO2CRC
- Active in international regulatory developments – **UNFCCC, London Convention, ISO TC265**
- Collaborations with IEA, CSLF, CCSA, EU ZEP and others



ieaghg



Partner Organisations:





Update on CSLF and IEAGHG Collaboration

Arrangement between CSLF Technical Group and IEAGHG

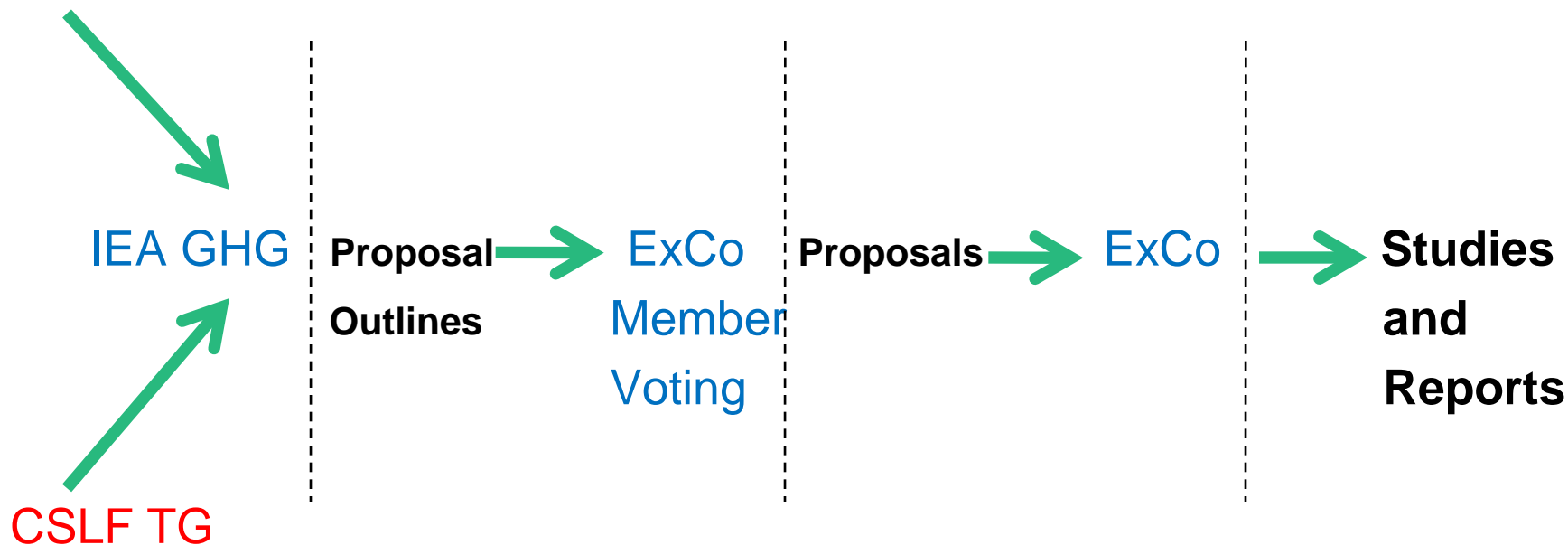


- How CSLF TG/PIRT and IEAGHG will interact for mutual benefit through increased co-operation
 - Mutual representation of each at CSLF TG and IEAGHG ExCo (no voting)
 - Liaison with PIRT co-chairs to discuss potential activities or projects – two way process
 - Activities would require approval by ExCo or TG
 - Due reference to org providing the resource
- Agreed by IEAGHG ExCo Oct 2007 and CSLF Technical Group Jan 2008



IEA GHG – Study generation

IEAGHG ExCo members





CSLF-proposed studies

- ‘Development of Storage Coefficients for CO₂ Storage in Deep Saline Formations’. IEAGHG Report 2009/13. Presentation at CSLF TG Mar 2010
- ‘Geological Storage of CO₂ in Basalts’, IEAGHG Report 2011/TR2. Presentation at CSLF TG Sep 2011
- Potential Implications of Gas Production from Shales and Coal for CO₂ Geological Storage. ARI. Report published 2013. IEAGHG Report 2013/10. Presentation at CSLF TG Nov 2013
- **Life cycle assessment (LCA) of CCUS – Benchmarking.** Proposed at 46th ExCo – will be a workshop with report – date early 2016 tbd
- Additional new study ideas invited from CSLF TG/PIRT
- Outline required by **6 July 2015**



Update on IEAGHG activities

Reports published



Title	Contractor	Report number	Publication date
CO ₂ Storage Efficiency in Deep Saline Formations: A Comparison of Volumetric and Dynamic Storage resource Estimation Methods	EERC (USA)	2014-09	16/10/2014
4 th Social Research Network Meeting	N/A	2014-10	23/10/2014
Monitoring Network and Modelling Network – Combined Meeting	N/A	2015-01	02/03/2015
Emerging Capture Technologies and Cost Reduction Potential	COFREE / IEAGHG (UK)	2014-TR4	23/12/2014
CCS Cluster Projects Review and Opportunities	COFREE	2015-03	April 2015
Criteria of Fault Geomechanical Stability During Pressure Build-up	Norges Geotekniske Inst.	2015-04	April 2015

Studies reported at 47th ExCo



Title	Contractor	Publication date
Impact of CO ₂ Impurity on CO ₂ Compression and Transportation	Newcastle University (UK)	July 2015
Oxy Gas Turbine Power Plants	Foster Wheeler (Italy)	June 2015
CO ₂ -EOR Emissions Accounting	Carbon Counts (UK)	August 2015
Review of Offshore Monitoring Techniques	BGS (UK)	May 2015
Hydrogen Production with CO ₂ Capture	Foster Wheeler (Italy)	May 2015
Emerging Capture Technologies and Cost Reduction Potential	COFREE/IEAGHG (UK)	July 2015 (TR4- Dec 2014)

Studies underway



Title	Contractor	Draft Report date
Monitoring Selection Tool	BGS	December 2014
Cost components for storage of CO ₂ in association with enhanced oil recovery	TNO (NL)	September 2014
Evaluation of CO ₂ Adsorption Process in Natural Gas Production	SINTEF (Norway)	February 2015
Evaluation of Various Process Control Strategy for Normal and Flexible Operation of PCC	Imperial College (UK)	January 2015
Understanding the Cost of Retrofitting CO ₂ Capture in Oil Refineries	Consortium led by SINTEF, cofunded by CLIMIT	2016
Techno-economic evaluation of CO ₂ capture for Pulp and Paper	VTT and AF Engineering (Finland)	May 2016
Value of Flexibility in CCS Power Plants	Imperial College (UK)	March 2016

Studies in tender



Title	Proposal number
Criteria for Depleted Oil and Gas Fields to be Considered for CO ₂ Storage	45-07
Fault Permeability	45-06

Studies awaiting start



Title	Proposal number
Energy Storage and CCS	Pending Value of Flexibility Study and Special Issue in IJGGC (Q1/2 2016)
Incorporating Future Technological Upgrades in Existing PCC	Pending PS return (Q3/4 2015)
Design and Costs of Full Scale Solid Looping CO ₂ Capture Plants [was deferred to after CLC conference in September 2014. Will be split into Calcium Looping and Chemical Looping.]	Q2 2015 for Calcium Looping Chemical Looping to follow in 2016.
Regional Variation of Capture Costs	Q2 2015
Application and Advances in Monitoring at Different Storage Sites	Specification to be shared with members first – (Q3 2015)
Geochemical Effects of Impurities in the CO ₂ Stream on Formation Rocks and Well Cements under In-situ Conditions	Superseded by IJGGC paper
Techno-Economic Evaluation of CO ₂ Capture in LNG Process	Specification to be shared with members first. For release (Q3 2015)

47th ExCo - Proposals Approved



No.	Title
47-06	Leakage into the Overburden
47-13	CCS and the Carbon Bubble
47-04	CO ₂ Storage Efficiency – Stage 2
47-12	Comparison of Accounting Protocols for CCS



IEAGHG 2015 meetings

- **Process Industry CCS Workshop**, Lisbon, Portugal, 10-11 Mar 2015
- **Monitoring Network**. LBNL, California. 10-12 June, 2015
- **Social Research Network**. University of Cambridge and Tyndall Centre, UK. 6 July 2015
- **High Temperature Solid Looping Network**. Milan, Italy. 1-3 Sep 2015
- **PCCC3**, Regina, Canada, 8-11 Sep 2015
- **Risk Management Network** and **Environmental Research Network**. National Oceanography Centre, UK. 30 Sep – 2 Oct 15
- **5th Oxyfuel Combustion Network Meeting**, Wuhan, China, 27-30 Oct 2015
- **LCA workshop**. 2016 tbc

GHGT-13



- Lausanne, Switzerland, 13-18 Nov 2016

Timeline

- Call for abstracts opens 1st October 2015
- Deadline for submission 10th February 2016
- Registration opens 6th April 2016
- Draft technical programme 1st June 2016
- Early bird registration closes 13th July 2016
- Sponsors welcome!



Thank you

Any questions?