



# CCS Finance Roundtable Report

Bernard Frois, Chair and Andrew Paterson Vice-Chair

CSLF Ministerial Meeting, Washington, DC, USA November 2013

# Financial Roundtable Members



- Chair: Bernard Frois, Director- CEA France
- Vice-Chair: Andrew Paterson, Principal, EBI/CCS Alliance
- Graeme Sweeney, Chairman – Zero Emissions Platform
- Allan Baker, Managing Director, Global Head of Power – Société Générale
- Chris Tynan, Director, Project Finance – Summit Power
- Pam Tomski, Senior Advisor, Policy and Regulatory, Global CCS Institute
- Shannon Angielski, Associate Director, Coal Utilization Research Council
- Martin Considine, Vice President, BTU Conversion - Peabody Energy
- Odin Knudsen, CEO – Real Options International
- Tim Bertels, Shell, Manager Global CCS Portfolio

# Financial Roundtable Members



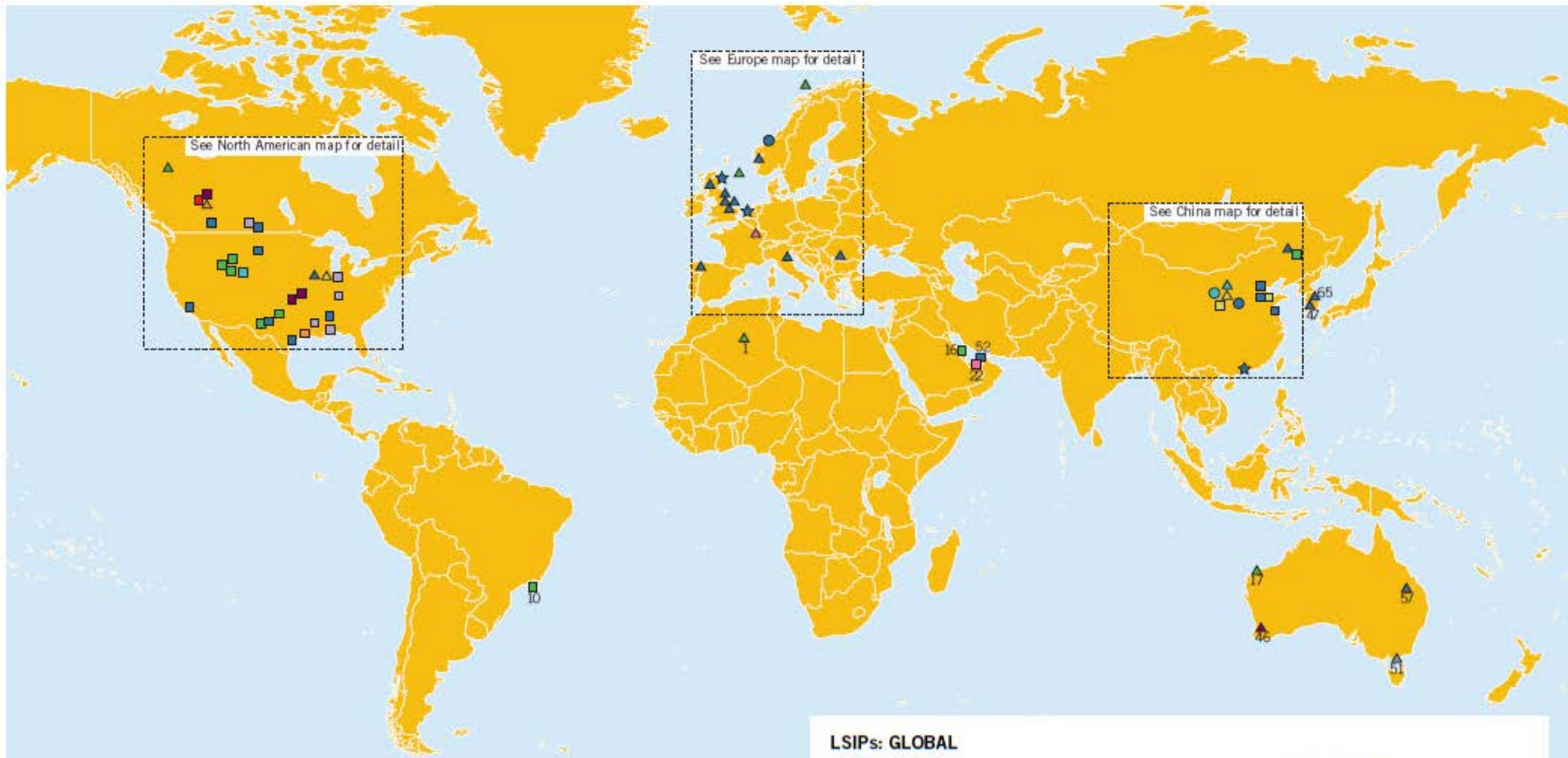
## CSLF Stakeholder Meeting, Washington D.C. 6/11/2013



**“Commercial and Financial Structuring of Industrial Scale Projects with CCS,  
What Will it Take to Turn Ambition into Reality”**

**20 January 2012, Société Générale, Paris, La Défense 7, France.**

# Projects with CCS by Sector



**LSIPs: GLOBAL**

Industry sector		Storage type
<span style="color: blue;">■</span> Power generation	<span style="color: cyan;">■</span> Coal-to-liquids (CTL)	<span style="color: blue;">△</span> Deep saline formations
<span style="color: green;">■</span> Natural gas processing	<span style="color: lightgreen;">■</span> Chemical production	<span style="color: blue;">□</span> Enhanced oil recovery (EOR)
<span style="color: purple;">■</span> Synthetic natural gas	<span style="color: pink;">■</span> Iron and steel production	<span style="color: blue;">☆</span> Depleted oil and gas reservoirs
<span style="color: maroon;">■</span> Fertiliser production	<span style="color: red;">■</span> Oil refinery	<span style="color: blue;">○</span> Various options considered/ not specified
<span style="color: orange;">■</span> Hydrogen production	<span style="color: grey;">■</span> Not specified	

Source: Global CCS Institute

# SHELL PARTICIPATION IN LARGE SCALE CCS PROJECTS



## Others

- Barendrecht
- Draugen
- Zerogen
- Monash
- Longannet

## Quest



## Peterhead



## Gorgon



## Mongstad



# CCS as a Value Proposition

- CCS needs a “*raison d’être*”, a narrative lens to shape public view
- Implied price of CO<sub>2</sub> is \$40/ton ( = Solar)
- Companies are ready to scale CCS development if projects are financeable, provided there are additional revenue streams or policy incentives
- Additional revenue streams are necessary to finance CCS development; they vary by project and area
- Power sector presents low margins for CO<sub>2</sub> capture; value-added sectors like fuels, polygen and industrial processes are better first-movers

# Investment-Grade Policy



- *“Without government support, the opportunity for CCS does not exist”*
- Local economic development matters
- CCS competitiveness is dependent on and supports a carbon-efficient economy
- Policy is critical to realizing local benefits and public acceptance
- Different locations call for different solutions



# Financial Policy and Public Acceptance

- CCS policies should be designed to accommodate local environments and financial realities
- CO<sub>2</sub> for EOR is a primary driver of CCS development in North America
- In other markets, strong policy support is required
- Regulatory advantages for projects with CCS provide incentives and manage risks better

# Progress Continues

- Investors are confident that cost of CCS will decrease with project development
- Industry is now learning from experience to develop innovative finance mechanisms, technology and policy must follow a similar development curve
- New technology developments are expected to significantly reduce costs

# Texas Clean Energy Project and Innovative CCS Financing



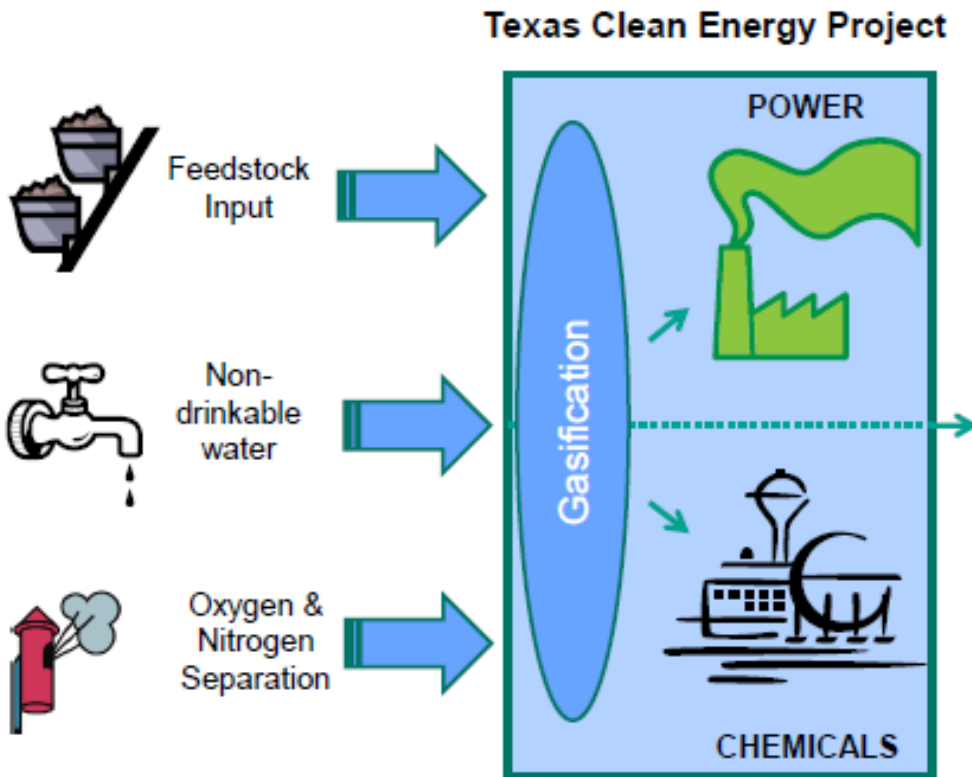
- With multiple revenue streams, government support, and funding from international banks, TCEP expects to make financial close by the end of 2014
- New windows in CCS financing are opened with deeper international cooperation
- International partners allow the project to leverage financing options from several Chinese and German export-import banks

# Texas Clean Energy Project



## Texas Clean Energy Project (TCEP)

TCEP will be the world's lowest emitting fossil fuel plant when completed



Products	% of Revenue
Near Zero Carbon Baseload Power (200 MW)	21%
Urea for Agriculture	53%
CO2 for EOR	18%
Carbon Credits (2.5 MM tpy)	??

# Path Forward for CCS Finance



- To ensure collaboration and further development of best practices in CCS finance, a follow-on round table will be convened in Paris in 2014 with the support of Société Générale
- Alternative financing mechanisms and regulatory incentives will be discussed in more depth