Workshop on Hydrogen Production with CCS. Chatou, France, November 6, 2019

Introduction

Workshop on Hydrogen Production with CCS

- Organised by

Carbon Sequestration Leadership Foum

IEA Greenhouse Gas R&D Programme

IEA Hydrogen Technology Collaboration Programme

Equinor ASA

- Hosted by

Électricité de France S.A.

Background

- CSLF Task Force Report on hydrogen production with CCS (https://www.cslforum.org/cslf/sites/default/files/documents/Venice2018/CSLF_Hydrogen_Task_Force_Phase_0_Final_Report_05_June_2018.pdf).

- Purpose: Identify relevant activities in member states and elsewhere
- Recommendation from that report: The Technical Group will coordinate with allied organizations to hold a workshop on hydrogen with CCS at a future CSLF meeting
  - IEAGHG,IEA Hydrogen TCP and IEA Gas and Oil TCP, others?
  - Could be held with Task Force on industrial CCS where hydrogen and hydrogen use in industry receive attention

- Targeted audience: Primarily scientists and project managers within the field of hydrogen production with CCS but also NGOs, non-profit organisations, governments, policy-makers

Objective and targeted outcomes of workshop

- Identify RD&D needs for decarbonised hydrogen.
- Lay a foundation for further co-operation, e.g. a common task on the topic between IEA Hydrogen TCP, IEA GHG, CSLF, industry and others
- Identify role decarbonised hydrogen can play in a future low-carbon society,
  - Speakers from IEA, large projects, industry and governments to give e views.

- Recommendations on decarbonised hydrogen to the CSLF ministers, or Clean Energy Ministerial (CEM) CCUS Initiative and Mission Innovation CCUS and Hydrogen Challenge.

Agenda

08:00 Registration

09:00 Welcome, background of workshop (IEAGHG and CSLF), and safety moment

09:10 *Session 1: Role of hydrogen in a low-carbon economy – long-term perspective. Chair Lars Ingolf Eide, Research Council of Norway*

09:10 Global Perspectives on hydrogen and IEA hydrogen activities. **Paul Lucchese, IEA Hydrogen TCP**
09:30 A national view . **Marten Hamelink, Ministry of Economic Affairs and Climate, the Netherlands.**
09:50 Safety aspects. **Y. John Khalil, IEA Hydrogen TCP Task 37**
10:10 The CCS chain – example of Northern Lights Project. **Per Sandberg, Equinor**

10.30 Break. *Basement*

10:50 *Session 1 continues*
Views from industry
10:50 Maritime**. Dr. Jacques Saint-Just, H2 Plus Ltd**
11:05 Refining. **Damien Valdenaire, Concawe**

11:15 Questions and discussions

Agenda

11:45	*Session 2: Case studies Chair Mary-Rose de Valladares, IEA Hydrogen TCP*
11:45	H21. **Anna Korolko, Equinor**
12:05	Hydrogen Energy Supply Chain (HESC). **Hiroshi Ohata, J-POWER, Japan**
12:25	Overview of Carbon Capture, Utilization and Storage (CCUS) and opportunities for Hydrogen in USA. **Mark Ackiewicz, US DOE** (Presented by **Richard Lynch, DOE**)
2:40	Key learnings from recent UK activities. **Emrah Durusut.Elementenergy**
12:55	Questions and discussions
13:15	Lunch. *Basement*
14:15	*Session 3: Technology status hydrogen production from fossil fuels w/CCS. Chair Christoph Schäfer, Equinor*
14:15	Overview of hydrogen production methods. **Mary-Rose de Valladares, IEA Hydrogen TCP**
14:35	Status of hydrogen production with CO_2 capture. **Sigmund Størset, SINTEF**.
14:50	Views from hydrogen producers and technology vendors (10 min each): **Fabrice Del Corso, Air Liquide** **Vince White**, Air Products **Markus Lesemann, GTI**

Agenda

15:30 Coffee breakout rooms. *Basement*

15:40 Breakout in groups
Questions to answer:

- Where to go from here - opportunities for and approaches to cooperation (e.g. common task force)?
- What are the RD&D needs for hydrogen production from fossil fuels w/CCS, with a view to bring down cost and carbon footprint?
  - Gaps
  - Bottlenecks
  - Analysis
- Creating a market for hydrogen w/CCS – what incentives, policy and regulatory aspects are needed or should be implemented?

16:45 Report out – breakout groups

17:15 Conclusions, wrap-up, the path forward

17:30 Adjourn

Technology Collaboration Programme
by iea

Who are we?

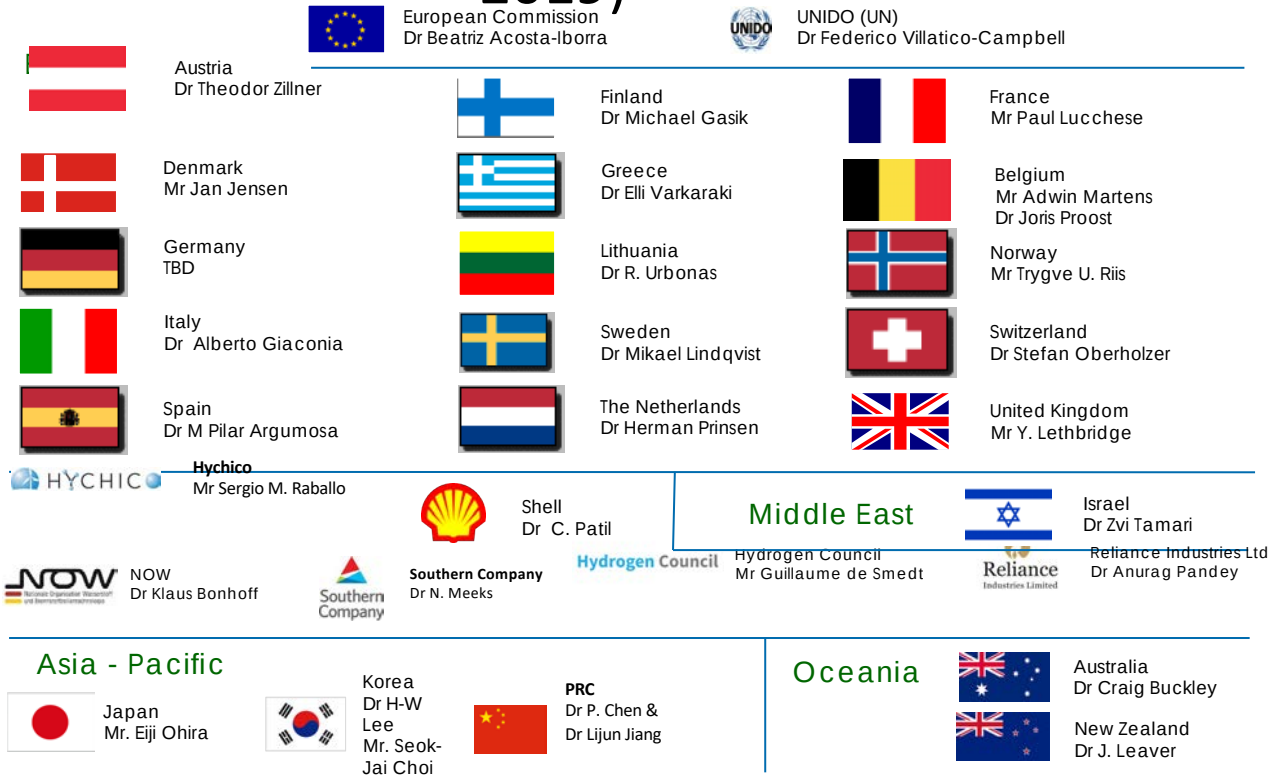
Our internationally recognised name is the IEA Greenhouse Gas R&D Programme (IEAGHG). We are a Technology Collaboration Programme (TCP) and are a part of the International Energy Agency's (IEA's) Energy Technology Network.

Disclaimer

The IEA Greenhouse Gas R&D Programme (IEAGHG) is organised under the auspices of the International Energy Agency (IEA) but is functionally and legally autonomous. Views, findings and publications of the IEA Greenhouse Gas R&D Programme do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.

IEAGHG Members

IEA Hydrogen Members - Executive Committee (August 2019)



21 Countries + European Commission + UN + 6 Sponsors (Argentina and Portugal in accession)

CSLF Overview


Australia


Brazil


Canada


China


Czech Republic


European Commission


France


Germany


Greece


India


Italy


Japan


Korea


Mexico


Netherlands


New Zealand


Norway

The CSLF is an international Ministerial-level climate change initiative whose mission is to accelerate development, demonstration and commercial deployment of improved cost-effective technologies for carbon capture and storage (CCS). It also promotes awareness and champions legal, regulatory, financial, and institutional environments conducive to such technologies.

The CSLF works via collaborative efforts that address key technical, economic ,political and environmental obstacles.


Poland


Romania


Russia


Saudi Arabia


Serbia


South Africa


United Arab Emirates


United Kingdom


United States

Thank you for the attention

Websites:

CSLF:	https://www.cslforum.org/cslf/
IEAGHG:	https://ieaghg.org
IEA Hydrogen TCP:	https://www.iea.org/tcp/hydrogen/
Equinor:	https://www.equinor.com
EDF:	https://www.edf.fr/en/meta-home
ClubCo2:	http://www.captage-stockage-valorisation-co2.fr/en

Breakout groups

Questions to answer:

- Where to go from here - opportunities for and approaches to cooperation (e.g. common task force)?
- What are the RD&D needs for hydrogen production from fossil fuels w/CCS, with a view to bring down cost and carbon footprint? Please consider the full supply chain.
  - Gaps
  - Bottlenecks
  - Analysis
- Creating a market for hydrogen w/CCS – what incentives, policy and regulatory aspects are needed or should be implemented?

Group work

- All groups address all three questions
- Groups select a rapporteur
- Prepare write-up with discussions and answers to all questions
- Prepare three – 3 – key points for each questions for presentation to plenary

Next steps

Revised presentations and group write-ups to

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by November 20

Report from workshop online:

Mid-January 2020