



11th CO₂GeoNet Open Forum

May 9-10, 2016

Increasing momentum for CO₂ storage

May 11, 2016

Joint CO₂GeoNet – GASSNOVA Research Workshop

Dealing with liability: final closure, liability and transfer of responsibility of the storage site

Joint CO₂GeoNet – EERA-CCS Research Workshop

Enabling transport and storage networks to serve distributed capture projects - the missing link?

Joint CO₂GeoNet – REPP-CO₂ Research Workshop

CO₂ storage pilot projects in europe

CO₂GeoNet - a resource for Europe providing scientific support for the geological storage of CO₂

CO₂GeoNet - an Association of 26 members over 19 countries

The Forum - to make scientific research and researchers available to stakeholders

Venice, San Servolo Island, Italy



Organized by CO₂GeoNet in collaboration with:



GASSNOVA



Endorsed by:



AGENDA

Monday May 9

8:30 **Registration**

9:00 **Welcome**

Sergio Persoglia, CO₂GeoNet Secretary General

9:05 **Objectives of the 11th CO₂GeoNet Open Forum**

Ton Wildenborg, President of CO₂GeoNet

Keynote Talk – Setting the frame

Chair: Ton Wildenborg, CO₂GeoNet-TNO & Ward Goldthorpe, The Crown Estate

09:20 **The carbon story of mankind and deep decarbonisation opportunities**

Jessica Strefler, Potsdam Institute for Climate Impact Research

10:00 **Discussion**

10:15 *Coffee break*

Session 1: CCS in the post-COP 21 world

Chair: Ceri Vincent, CO₂GeoNet-BGS & Manfred Treber, Germanwatch

10:45 **Outcome of COP 21 – Key messages for CCS and future role of CO₂GeoNet**

Isabelle Czernichowski, CO₂GeoNet-BRGM

11:05 **The European perspective on CCS after COP 21**

Maria Velkova, EC DG Climate Action

11:25 **CO₂ Market Makers to deliver on the COP 21 targets**

Jonas M. Helseth, Bellona Foundation

11:45 **Discussion**

12:15 *Lunch break*

Session 2: CCS and national roadmaps

Chair: Isabelle Czernichowski, CO₂GeoNet-BRGM & Paul Bonnetblanc, French Ministry of Environment, Energy and Sea

13:45 **The role of CCS in The Netherland's energy system**

Gerdi Breembroek, Netherlands Enterprise Agency

14:05 **Enabling investment in CO₂ storage**

Ward Goldthorpe, Advisor to The Crown Estate, Managing Director Sustainable Decisions Limited

14:25 Norway – The European CCS driver
Ragnhild Rønneberg, The Research Council of Norway

14:45 Discussion

15:15 Coffee break

Session 3: “Non-traditional” CCS and its role for emission targets

Chair: Axel Liebscher, CO₂GeoNet-GFZ & Gabriel Marquette, GEODENERGIES

15:45 It’s not all about electricity
Derek Taylor, GERC

16:05 CCS for industry emissions – The CEMCAP Project
Kristin Jordal, CO₂GeoNet-SINTEF

16:25 CO₂ dissolved - Towards a pilot coupling dissolved CO₂ storage and geothermal heat production
Marie Gastine, Géodénergies

16:45 CCS with offshore EOR
Roman Berenblyum, CO₂GeoNet-IRIS

17:05 Discussion

17:35 Closing remarks Day 1
Ton Wildenborg, TNO, President of CO₂GeoNet

From 18:30 Welcome cocktail San Servolo Island - Room Basaglia

8:30 **Welcome and introduction**

Ceri Vincent, BGS, Chair of CO₂GeoNet Executive Committee

Session 4: Status and progress of large scale integrated projects and storage pilots

Chair: Sabina Bigi, CO₂GeoNet-La Sapienza & Benjamin Court, GCCSI

08:45 **Boundary Dam and Aquistore, Canada**

Kyle Worth, PTRC Canada

09:00 **ROAD CCS Demo Project, The Netherlands**

Andy Read, ROAD – Maasvlakte CCS Project

09:15 **Ketzin, Germany – Closing the life cycle**

Axel Liebscher, CO₂GeoNet-GFZ

09:30 **Hontomin, Spain – Prepared for regular injection**

José Carlos de Dios, CO₂GeoNet-CIUDEN

09:45 **Discussion**

10:15 *Coffee break*

Session 4: Continued

Chair: Roman Berenblyum, CO₂GeoNet-IRIS & Kyle Worth, PTRC

10:45 **The Heletz site, Israel - Injection status**

Auli Niemi, Uppsala University

11:00 **Sulcis, Italy – From characterization to operation?**

Sabina Bigi, CO₂GeoNet-La Sapienza

11:15 **REPP-CO₂ - Preparation of a research pilot project on CO₂ geological storage in the Czech Republic**

Vit Hladik, CO₂GeoNet-Czech Geological Survey

11:30 **ENOS - Enabling onshore CO₂ storage in Europe - H2020 project**

Marie Gastine, CO₂GeoNet-BRGM

11:45 **Discussion**

12:15 *Lunch break*

Session 5: Supporting CCS implementation by R&D

Chair: Marjeta Car, CO₂GeoNet-GEO-INZ & Auli Niemi, Uppsala University

13:45 **COORAL/CLUSTER – From impurities to CCS cluster development**

Heike Rütters, CO₂GeoNet-BGR

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- 14:00 MiReCOL – Mitigation and remediation of CO₂ leakage**
Filip Neele, CO₂GeoNet-TNO
- 14:15 ULTimateCO₂ – Understanding the long term fate of geologically stored CO₂**
Pascal Audigane, CO₂GeoNet-BRGM
- 14:30 European Storage Atlas – Mapping and ensuring European storage potential**
Niels Poulsen, CO₂GeoNet-GEUS
- 14:45 R&Dialogue – Building a low carbon society together**
Samuela Vercelli, CO₂GeoNet-La Sapienza
- 15:00 Discussion**
- 15:30 Coffee break**
- Session 5: Continued**
Chair: Niels Poulsen, CO₂GeoNet-GEUS & Derek Taylor, GERC
- 16:00 EU initiatives on CCS – Moving towards the European Technology and Innovation platform**
Vassilios Kougionas, EC DG Research & Innovation
- 16:15 ECCSEL - A European CCS research infrastructure now in operation**
Sverre Quale, NTNU
- 16:30 ACT – A new ERA-NET European activity to accelerate CCS implementation**
Ragnhild Rønneberg, Research Council of Norway
- 16:45 Discussion**
- 17:15 Closing remarks Day 2**
Ceri Vincent, BGS, Chair of CO₂GeoNet Executive Committee

17:45 Departure by boat to the Concert and Gala Dinner

WORKSHOP: Dealing with liability: final closure, liability and transfer of responsibility of the storage site

Side event of the CO₂GeoNet Open Forum organised by the Gassnova in cooperation with CO₂GeoNet

09:00 **Opening of the workshop**
Øystein Arild, IRIS & Niels Peter Christensen, Gassnova

Session 1: Regulatory issues

Chair: Øystein Arild, IRIS & Niels Peter Christensen, Gassnova

09:10 **Dealing with liability under EU law**
Ingvild Ombudstvedt, Global CCS Institute

09:35 **Practical treatment of liability in the UK**
Ward Goldthorpe, Advisor to The Crown Estate, Managing Director Sustainable Decisions Limited

10:00 **The Road project**
Andy Read, Road project

10:25 **Panel discussion / Q&A with speakers**

10:45 Coffee break

Session 2: Case studies

Chair: Øystein Arild, IRIS & Niels Peter Christensen, Gassnova

11:15 **Development of a new CO₂ storage facility on Norwegian Continental Shelf**
Per Ivar Karstad, Statoil

11:40 **Johanssen case study**
Hallvard Høydalsvik, Gassnova

12:05 **The Peterhead Experience**
Owain Tucker, Shell

12:30 **Panel discussion / Q&A with speakers**

12:45 Lunch break

Session 3: Leakage mitigation

Chair: Filip Neele, TNO

13:45 **Remediation of undesired CO₂ migration inside the reservoir**
Axel Liebscher, GFZ

14:10 **Polymer-gel solutions for remediation of leakage**
Sevket Durucan, Imperial College

- 14:35** **The MiReCOL corrective measure tool**
Logan Brunner, TNO
- 15:00** **Panel discussion & Q&A with speakers**
- 16:15** **Closing remarks**
Øystein Arild, IRIS & Niels Peter Christensen, Gassnova

Wednesday May 11

WORKSHOP: Enabling transport and storage networks to serve distributed capture projects – the missing link?
Side event of the CO₂GeoNet Open Forum organised by by EERA-CCS in cooperation with CO₂GeoNet

- 09:00** **Opening of the workshop**
Jonathan Pearce, British Geological Survey

Session 1: Next steps for verifying European CO₂ storage capacity

Chair: Ceri Vincent, British Geological Survey

- 09:15** **Perspectives from Northwestern Europe**
Jonathan Pearce, British Geological Survey

- 09:30** **Perspectives from the Baltic Region**
Adam Wojcicki, Polish Geological Institute

- 09:45** **Plenary discussion / panel Q&A**

- 10:30** *Coffee break*

Session 2: Challenges and opportunities for flexible CO₂ transport networks

Chair: Julia Race, UK CCS Research Centre / University of Strathclyde

- 11:00** **Key findings from IMPACTS**
Filip Neele, TNO

- 11:15** **Multimodal transport of CO₂ - A solution for South-East Europe and, why not, for a large part of Europe**
Constantin Sava, GeoEcoMar (invited)

- 11:30** **Plenary discussion / panel Q&A**

12:15 *Lunch break*

Session 3: Developing integrated CCS transport and storage networks

Chair: Jonathan Pearce, British Geological Survey

13:15 **Delivering CCS infrastructure using PCIs**

Vivian Scott, SCCS

13:30 **Project GATEWAY**

Marie Bysveen, SINTEF

13:45 **Plenary discussion / panel Q&A**

14:15 **Flexible CCS network development and key messages from workshop**

Julia Race, EERA CCS Joint Programme Management Board and University of Strathclyde

14:30 **Workshop closes**

Wednesday May 11

WORKSHOP: CO₂ storage pilot projects in Europe

Side event of the CO₂GeoNet Open Forum organised by the REPP-CO₂ project* in cooperation with CO₂GeoNet

15:00 **Opening of the workshop**

Vit Hladik, Czech Geological Survey

Session 1: LBr-1 – Planned CO₂ storage pilot site in the Czech Republic

15:10 **REPP-CO₂ – Czech-Norwegian research project to prepare a CO₂ storage pilot in the Czech Republic**

Vit Hladik, Czech Geological Survey

15:20 **Lessons from constructing a 3D geological model of LBr-1, a depleted oilfield from the 1960s – Is this at all possible?**

Juraj Francu, Czech Geological Survey

15:40 **Dynamic modelling and simulations of CO₂ injection at the LBr-1 site**

Roman Berenblyum, International Research Institute of Stavanger

16:00 *Coffee break*

* The REPP-CO₂ project is supported by a grant from Norway.

Session 2: CO₂ storage pilots in Europe

16:20 Heletz CO₂ storage pilot, Israel

Auli Niemi, Uppsala University

16:40 Hontomín Technology Development Plant, Spain

Josè Carlos de Dios, CIUDEN

17:00 GeoEnergy Test Bed, UK

Ceri Vincent, British Geological Survey

17:20 Feasibility of CO₂ storage and enhancement of HC production in the condensate gas field Q16 Maas, The Netherlands

Ton Wildenborg / Filip Neele / Maurice Hanegraaf, TNO

17:40 Final discussion

Sponsors

CLIMIT



French national hub in the field of CO₂ capture, transport, use and storage (CCUS)

GEOTEC SPA

Soil investigations and land surveying



Italian national institute of oceanography and experimental geophysics



San Servolo Island



CO₂GeoNet

The European Network of Excellence on the Geological Storage of CO₂

About CO₂GeoNet

CO₂GeoNet is the European scientific body on CO₂ geological storage. The Association currently comprises 26 research institutes from 19 European countries, and brings together over 300 researchers with the multidisciplinary expertise needed to address all aspects of CO₂ storage. With activities encompassing joint research, training, scientific advice, information and communication, CO₂GeoNet has a valuable and independent role to play in enabling the efficient and safe geological storage of CO₂. CO₂GeoNet was created in 2004 as a Network of Excellence supported by the EC FP6 programme for 5 years. In 2008, CO₂GeoNet became a non-profit association under French law. From 2013, the membership of CO₂GeoNet expanded thanks to the support of the now completed FP7 CGS Europe project. New Members continue to join CO₂GeoNet to further enhance the pan-European coverage and expertise of the Association.

More about CO₂GeoNet at www.co2geonet.com

CO₂GeoNet members

Austria: GBA - Geologische Bundesanstalt; **Belgium:** RBINS-GSB - Royal Belgian Institute of Natural Sciences; **Croatia:** UNIZG-RGNF - University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering; **Czech Republic:** CGS - Czech Geological Survey; **Denmark:** GEUS - Geological Survey of Denmark and Greenland; **Estonia:** TTUGI - Institute of Geology at Tallinn University of Technology; **France:** BRGM - Bureau de Recherches Géologiques et Minières; **Germany:** BGR - Bundesanstalt für Geowissenschaften und Rohstoffe; **Germany:** GFZ - German Research Centre for Geosciences / Deutsches GeoForschungsZentrum; **Hungary:** MFGI - Magyar Földtani és Geofizikai Intézet; **Italy:** OGS - National Institute of Oceanography and Experimental Geophysics; **Italy:** URS - Università di Roma "La Sapienza"; **The Netherlands:** TNO - Netherlands Organisation for Applied Scientific Research; **Norway:** IRIS - International Research Institute of Stavanger; **Norway:** NIVA - Norwegian Institute for Water Research; **Norway:** SPR - SINTEF Petroleum Research; **Poland:** PGI-NRI - Polish Geological Institute - National Research Institute; **Romania:** GeoEcoMar - National Institute of Marine Geology and Geoecology; **Slovenia:** GEO-INZ - Geoinženiring d.o.o.; **Spain:** CIUDEN - Fundación Ciudad de la Energía; **Spain:** IGME - Instituto Geológico y Minero de España; **Switzerland:** ETH - Swiss Federal Institute of Technology Zurich; **Turkey:** METU-PAL - Middle East Technical University Petroleum Research Center; **UK:** BGS - British Geological Survey; **UK:** HWU - Heriot-Watt University; **UK:** IMPERIAL - Dept. of Earth Science and Engineering, Imperial College London.