



Raising the visibility of CO₂ geological storage at COP23

From 6 to 16 November 2017 the beautiful city of Bonn hosted the 23rd Conference of the Parties on climate change (COP23) organised by the Government of Fiji. The conference events took place in two zones; the Bula Zone (negotiations) and the Bonn Zone (side events and booths). CO₂GeoNet, an officially recognised RINGO for the UNFCCC, co-organised side events and was lead organiser for a booth in the Bonn Zone.

As COP23 negotiations are now translating the ambitions of COP21 into actions, CO₂GeoNet played a major role in raising the visibility of CO₂ geological storage during the conference, and renewed ties with organisations heavily involved in CCS such as the University of Texas at Austin, IEAGHG, GCCSI and UK Carbon Capture and Storage Association (CCSA) and welcomed new collaboration with the Taiwan Institute of Carbon Capture Storage and Utilisation Association (TCCSUA).

The booth, organised in collaboration with TCCSUA, was open during the whole period of the conference and representatives from CO₂GeoNet and TCCSUA were available to answer questions and present the basic facts on CCS technology in general, as well as to

explain why large-scale deployment of CCS is needed in order to meet the Paris Agreement targets. The booth attracted significant interest from delegates and observers; visitors included national delegates, NGOs, financiers, students, researchers etc. All the visitors who expressed an interest in receiving further information will be contacted and added to the mailing list to receive CO₂GeoNet news.

The material at the booth, following the COP23 no paper policy, consisted of laminated covers of the CO₂GeoNet brochure in a few languages, and some rocks to show the difference between

reservoir and seal rock characteristics. Visitors were directed to the dedicated CO₂GeoNet COP23 website to download presentations, posters and brochures presented at the side events and on the booth (<http://www.cop23.co2geonet.com/>). Files such as the CO₂GeoNet brochure were also uploaded onto the UNFCCC virtual gallery website and the Poken "touch-to-collect" technology.

Please, read more about COP23 on the following pages.

*Sabina Bigi, Sapienza, Italy
Ceri J. Vincent, BGS, UK*



Editorial

Transition technology for the energy transition



Most IPCC and IEA scenarios state that deep and timely cuts in CO₂ emission reduction are necessary to reach the ambitious targets of the Paris Agreement. Energy efficiency measures and implementation of renewable energy will very likely not be sufficient to reach the climate goals. Industrial manufacturing of steel and cement is impossible without generating CO₂ as a by-product; refining iron ore for steel manufacture generates CO₂ and the production of clinker from carbonates, the basic component of cement, generates CO₂. These two commodities are at the basis of most construction works worldwide including windmills and without CCS these process emissions cannot be significantly reduced. CCS is an indispensable climate mitigation measure, which is not only recognised at a global level. Regional emission reduction policies and strategies in the UK, Norway and the Netherlands show that CCS plays a

distinct role in achieving the required emission reduction.

My feeling is that we are on the eve of exciting and busy times for the CO₂ storage community. In September last year the implementation plan for the SET-plan Action 9 on CCS and CCU was approved, which marks the starting point for many research and innovation activities on a Europe wide storage atlas, appraisal of CO₂ storage capacity and the construction of transport and storage infrastructure. CO₂GeoNet will hold its annual **Open Forum in Venice on 24 and 25 April 2018**, which will give ample opportunity to discuss the current state-of-play of CCS and CO₂ storage and the necessary future actions. The Open Forum is preceded and followed by topical workshops. Herewith, I invite you to come to this informative and interesting event.

Ton Wildenberg, President CO₂GeoNet

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COP23 - Building the spirit to reach the ambitious Paris target

Last year from 6 to 17 November the annual COP climate conference was held in Bonn organised by the Fiji Government. Twenty thousand people from all over the world were present over the two weeks, comprising national delegates carrying out the negotiations, observers arranging side events and booths and interested visitors. CO₂GeoNet as an observer organised several side events and a booth together with several allied organisations.

The Conference of Parties led by Fiji set up the Talanoa dialogue which is facilitating the adoption of the Paris Rulebook and the first stocktaking effort in the nationally determined contributions (NDCs) at the COP24 in Katowice (Poland) at the end of 2018. Talanoa stands for the Fijian tradition of sharing stories, building empathy and making wise decisions, for the collective good (from the UNFCCC web site). The main items of the dialogue relate to the current state-of-play, the ultimate target and the way to achieve this.

CO₂ infrastructure for public good

On the morning of 6 November, the first day of the conference, CO₂GeoNet and co-organisers Bellona, CCSA, EERA CCS, GCCSI, ZEP & IEA GHG R&D Programme kicked off with a side event in the EU Pavilion, which was attended by 25 persons. The event was centred around CO₂ infrastructure for public good. Ton Wildenberg (CO₂GeoNet President) introduced informative material which initiated a vibrant discussion after his presentation. Charles Soothill (ZEP Vice Chair) presented the indispensable role of CCS in meeting low emission targets. One trillion Euros can be saved if CCS is considered and results in deeper cuts in emissions (based on a model for 10 European countries). Industries like steel manufacturing require CCS to cut its emissions: implementation of CCS can reduce steel production emissions by about 12%. Reducing emissions in the electrification of transport will rely on CCS until 2050. Rob van der Meer (Heidelberg Cement) suggested that reducing emissions from cement will be achieved by a combination of more efficient production of clinker, utilisation of CO₂ and CCS. Marie Bysveen (Sintef/EERA CCS) illustrated the pioneering



Discussion at the booth (photo courtesy G. von Goerne)

role of Norway in demonstrating CCS as a feasible and viable mitigation option. Norway contributes close to 20% of the global R&D budget on CCS. Norway now has the ambition to develop a network of industrial CCS projects in waste to energy, cement and ammonia production with storage in the offshore Smeaheia aquifer. Anne-Beth Skrede (Norwegian Federation of Trade Unions), stressed that the energy transition is very much about creating jobs and growth with electrification and CCS. The Norwegian oil and gas business employing 250,000 personnel is going to

decline. Here lies a large responsibility for the state to develop infrastructure, promote new industries and strengthen R&D and demonstration. The active discussion lead by Keith Whiriskey from Bellona, pointed out that building a common infrastructure with hubs, pipeline transport and ships is key.

Storing carbon dioxide in order to meet Paris Agreement targets

On Wednesday, 8 November, Ceri Vincent (Chair of the CO₂GeoNet Executive Committee) introduced and mediated



Discussion during the side event in the EU Pavilion in the morning of 6 November (photo courtesy T. Wildenberg)

discussions at a side event in the Energies2050 Pavilion. The lead organiser CO₂GeoNet with the European Business Council for Sustainable Energy (e5), IPIECA & Taiwan Carbon Capture Storage and Utilisation Association (TCCSUA) set out a very attractive programme which dealt with CO₂ storage and utilisation.

Tim Dixon (IEA GHG) presented results from global IEA models seeking emissions well below the 2°C scenario (IEA B2DS), which showed that more CCS is needed in industry (e.g. steel and cement) and negative emissions need to be created in the power sector. John Scowcroft (GCCSI) pointed out that CCS has to increase from the current 37 Mtpa to 3,700 Mtpa by 2040 to reach the 2°C scenario (2DS). The energy transition and climate change are integral parts of the overarching UN Sustainable Development Goals (SDGs), in particular SDG 7 on access to affordable energy and SDG 13 on climate

change abatement as Jim Herbertson from IPIECA elucidated. Emerging economies depending on coal-fired power like China and India can avoid emissions with the help of CCS. Kolja Kuse (Chairman of the European Business Council for Sustainable Energy) observed that carbon is a popular material used in reinforced construction materials for example railway sleepers, which provides a method for sequestration. Polycarbonate manufacture also contributes to locking away carbon, via this method Taiwan has reduced annual CO₂ emissions by 0.3 Mt.

A lively discussion ensued showing that CO₂ storage and utilisation have complementary roles and their advocates can contribute to the discussion on future climate actions. It was acknowledged that both CCS and CCU are needed. The metaphor of 'harvesting fruit' was nicely debated. The conclusion was that activities do not end after 'collecting the low hanging fruit'. In the

end 'all the fruit needs to be gathered by extending the ladder'.

Booth on CCS and the science of CO₂ storage

CO₂GeoNet and Taiwan Carbon Capture Storage and Utilisation Association (TCCSUA) organised a booth to offer non-specialists information on the science behind CO₂ geological storage and why we need it. The booth attracted a continual stream of interested people, including delegates from developing countries, students and young professionals. Visitors asked for explanations on the principles of CCS and discussed the pros and cons with CO₂GeoNet and TCCSUA representatives. As well as several posters, rock samples, videos and brochures (downloadable in many languages) were on display at the booth.

*Ton Wildenborg, TNO, The Netherlands
Niels Poulsen, GEUS, Denmark*

John Scowcroft, GCCSI, presenting at the event in the Energies2050 Pavilion on 8 November

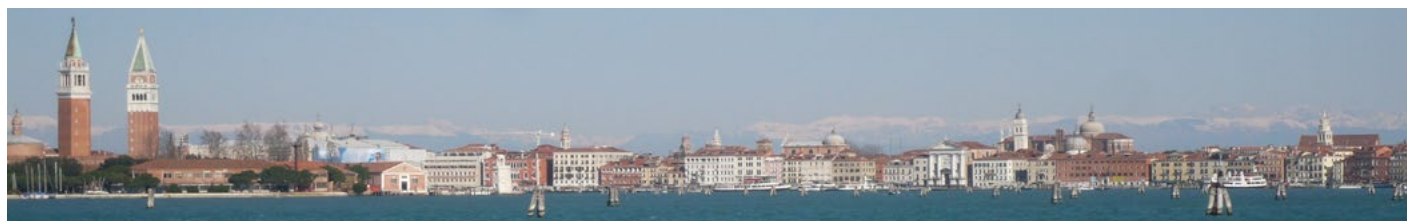


Lively debate at the end of the event in the Energies2050 Pavilion on 8 November



CO₂GeoNet Open Forum 2018 - registration open -

The 13th CO₂GeoNet Open Forum will take place on San Servolo Island, Venice on 24-25 April 2018 with Pre- and Post-Open Forum workshops organised on 23 and 26 April. This year, the focus will be on **Growing CCS for a sustainable future**, examining progress towards a net zero emission future, sharing experience from project across the world and exploring new sectors and opportunities for growth in the CCS industry. You are kindly invited to register at www.conference2018.co2geonet.com.





CCS and CCU – Recognised Strategic Energy Technologies

Ten years ago the plan for developing low-carbon technologies for an integrated European energy system was launched. To this end ten key actions were identified, one of which is directed towards CCS and CCU (Action 9). CO₂GeoNet participated in extensive stakeholder consultations and delivered a position paper on strategic CO₂ storage targets in April 2016. This process resulted in the publication of

the Declaration of Intent on 'Renewing efforts to demonstrate carbon capture and storage (CCS) in the EU and developing sustainable solutions for carbon capture and use (CCU)'. From late 2016 until late 2017 the targets were translated into eight Research and Innovation activities, which together make up the CCS and CCU Implementation Plan. In September 2017 the plan was endorsed by the SET Plan secretariat. CO₂GeoNet

contributed in particular to the definition of actions on establishing a European CO₂ Storage Atlas (R&I activity 4) and on unlocking European storage capacity (R&I activity 5). The ETIP ZEP and the Norwegian and Dutch governments guided the temporary Working Group which produced the Declaration of Intent and the implementation plan. In 2018 the group continued as the Implementation Working Group (IWG) to monitor progress in implementing the strategic targets and defining supportive actions.

More information can be found at <https://setis.ec.europa.eu/>.

Ton Wildenberg, TNO, The Netherlands

CO₂GeoNet at the CSLF Ministerial Meeting

CO₂GeoNet and CCSA acting jointly as the European Regional Stakeholder Champion hosted the first CSLF European stakeholder meeting in line with the new strategy initiated in 2016. The key messages from this event, held on 6th October 2017 in Brussels, were taken forward to the 7th CSLF Ministerial hosted in Abu Dhabi in early December 2017. The key messages from the European stakeholders recommended practical actions that ministers could use to show continued political support for CCS and to accelerate CCS roll-out in the European region, e.g. including CCS in national climate targets (including NDCs) and infrastructure plans, developing tailored mechanisms to advance CCS with ring-fenced funding and providing policy sup-



port for collaboration with industrial companies and regions on CCS. Please see the [CO₂GeoNet website](http://www.co2geonet.com) for more information.

Ceri J. Vincent, BGS, UK

*Ton Wildenberg
welcomes stakeholders to
the CSLF Ministerial Meeting
in Brussels
(photo courtesy C.J. Vincent)*



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