New leadership for the CO₂GeoNet Association

Since its foundation in 2004, CO₂GeoNet has been successfully guided by Isabelle Czernichowski–Lauriol, BRGM. During the elections in March 2015, leadership of the Association was entrusted to Ton Wildenborg, TNO. Here are some thoughts from the past and the new Presidents.

It has been my pleasure to participate in the founding team of CO₂GeoNet - together with Nick Riley, Sergio Persoglia, Niels Peter Christensen and Ipo Ritsema, and to take an active role in its development as Network Manager under the FP6 contract, then as Chair of the Executive Committee when the Association was created in 2008 and finally as President from 2011. CO₂GeoNet is now a strong, independent, pan-European Association, which represents the scientific voice of Europe on CO₂ geological storage that interacts with many stakeholders in Europe and globally to develop this key climate change mitigation technology. This has been possible thanks to the involvement of each CO₂GeoNet Member and researcher and to the huge collective effort, in which everyone had an important role to play. After 11 years of heavy involvement in the management of CO₂GeoNet, I thought it was time to pass the baton and I am very pleased that Ton Wildenborg was elected as the new President. I will continue to be involved in CO₂GeoNet activities, especially since I had the great surprise and honour during the gala evening of the Venice Open Forum to be appointed President Emeritus!

Isabelle Czernichowski - Lauriol, BRGM, France

I feel privileged to be elected as president of the CO₂GeoNet Association and succeed Isabelle; she left a strong Association with a high level of ambition. I wish to thank Isabelle for all her efforts that enabled CO₂GeoNet to prosper. The Association has arrived in exciting times where we face many challenges in positioning geological CO₂ storage as a reliable and substantial climate mitigation measure. Expectations are growing for the outcomes of the next COP/CMP meeting in Paris, December 2015. Large cuts in emissions, as we know, imply large-scale deployment of CCS since a substantial part of our energy is expected to still come from fossil fuels even when we are halfway through this century. CO₂GeoNet is keen to profile CO₂ storage and CCS as a safe and effective emission reduction measure at the pre-COP scientific conference in Paris from 7th to 10th July 2015 and at side events including those being co-organised by the Association in the UK and Italy. Next to CO₂GeoNet’s activities to inform and engage stakeholders, offer scientific advice, provide training and perform research, the Association will invest in the social fabric of its network of 26 Members from 19 different European countries.

Ton Wildenborg, TNO, The Netherlands

International Sulcis Summer School on CCS Technologies 2015

The third edition of the International Sulcis Summer School on CCS Technologies will be held in Carbonia (Cagliari, Sardinia), at the Sotacarbo Research Centre, from the 13th to the 17th of July. The Summer school is organized by ENEA, The University of Cagliari (Department of Mechanical, Chemical and Materials Engineering), Sotacarbo, IEA CCC and CO₂GeoNet. It responds to the increasing interest worldwide for the technologies of separation and containment of carbon dioxide (CCS-“CO₂ Capture and Storage”). The school is open to 40 MSc/MA or PhD students from around the world who have an engineering, geo-technological or socio-economic background. The lecture program will cover the range of techniques developed for the capture, transport and geological storage of CO₂. The Sulcis basin can be considered the ideal natural laboratory for experimentation of these technologies, thanks to the presence of deep layers of coal (suitable for the permanent storage of CO₂ due to its particular geological features) and also of an aquifer underneath the coal basin that offers additional storage potential.

Read more at: http://www.sulcisccssummerschool.it/en

Sabina Bigi, La Sapienza, Italy
Samuela Vercelli, La Sapienza, Italy

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Outcomes of the Open Forum for CO₂ storage as the cornerstone of our low carbon future

The 10th anniversary of the CO₂ GeoNet Open Forum was celebrated in Venice by gathering researchers from the global Carbon dioxide Capture and Storage (CCS) Community and many international stakeholders to present the latest advancements in the science and technology of geological CO₂ storage.

The Open Forum and workshops were organized in close collaboration with the European Commission, the United States Department of Energy (DoE) and the European Energy Research Alliance (EERA). The involvement, support and engagement of many major global players that are shaping strategy framework for emission mitigation actions represents a strong global drive to work together to mitigate climate change.


A critical time for CCS

The IPCC’s Fifth Assessment Report (AR5) recognises CCS as an important option for reducing greenhouse gas emissions, in fact 85% of scenarios in AR5 require negative emissions via bioenergy with CCS in order to achieve the 2 degrees scenario (2DS). The UNFCCC COP-21/CMP 11 conference to be held in Paris in December 2015 will be an important milestone for CCS; if an agreement can be reached and translated into global policy, then pathways for CCS to fulfil its potential for emission abatement will emerge.

Key messages from the Open Forum and workshops

Political support remains essential for widespread deployment and in building a business case for CCS. Regulatory support is required in the short, medium and long term and these mechanisms must be complementary and enable movement from subsidised demonstration projects to a future low carbon market of which CCS will be a key component.

The demonstration projects highlight new research challenges including the need for understanding the impact of storage and advancing the techniques to model heterogeneities in the reservoir and at the boundaries of the storage complex. Other key challenges for CCS include increasing the number of pilot and demonstration projects to broaden the range of practical experience which will in turn improve confidence in CCS and further advance technical capabilities, establishing a methodology to quantify uncertainty such that it can be communicated effectively to all stakeholders and transferring the knowledge acquired to inform policies with technical and economic outcomes.

Storage capacity has been mapped in Europe and alongside the many research projects, pilot scale studies and demonstration projects prove there is storage potential. This potential storage capacity now needs to be advanced through detailed studies to a dynamic atlas with assured storage capacity and ‘sweet spots’ for storage highlighted ready for operators to undertake site-specific studies to obtain a storage licence.

The workshop on capture highlighted the global advances made through experiments, pilot and demo projects on improving the efficiency and reducing the costs of capture. A key theme was that upscaling these techniques for large scale capture is not a straightforward process but is nevertheless strongly required to advance CCS. The workshop proved the value of sharing learnings between projects.

The success of CCS does not depend solely on technical factors, effective communication to build a strong relationship with the local community during the early stages of implementation and throughout the project process is vital.

The Open Forum

The growth of the Open Forum mirrors the evolution of the CO₂ GeoNet Association, with the number of countries involved growing steadily and attendance of high level scientists and stakeholders debating the latest outcomes and barriers in R&D and implementation of CCS and in terms of liaising with associations around the world.

The appealing island of San Servolo contributes to the inspiring atmosphere among participants and nearby Venice always offers additional cultural and culinary delights.

The next Open Forum is proposed for 9th to 11th May 2016, we hope you will be able to join us. Please visit our website http://conference.co2geonet.com/ where you can find presentations from the 2015 Open Forum and workshops events, a video presentation from the keynote speaker titled “Why is CCS cost-effective for mitigating climate change?”, short videos from most speakers and a report on the key messages from the Open Forum.

Ceri J. Vincent, BGS, UK
Ton Wildenborg, TNO, The Netherlands
Marjeta Car, GEO-INZ, Slovenia
Across Europe and particularly in the North Sea there has been a focus on the development of capture, transport and storage hubs (e.g. ROAD). The advantages of hubs include optimisation of CCS network infrastructure and cost reduction. There are challenges around developing and managing shared infrastructure, for example while the transport and storage components are not tied to a specific source of emissions, the capture component is, and it will be important for the various facilities to have common criteria for CO₂ purity and contaminant concentrations in order to support the common transport and storage infrastructure.

However, experience in the USA shows this can be managed, indeed multiple sources may introduce greater flexibility in managing purity as blending of CO₂ from different sources will be possible. A number of industrial regions in Europe around the North Sea, Baltic and elsewhere have examined the potential to develop as CCS hubs. These include Yorkshire and Humber (National Grid¹), the Tees Valley (Teesside Collective²), Rotterdam (Rotterdam Climate Initiative³), Antwerp, and central and eastern Scotland (Scottish Enterprise and Scottish Carbon Capture & Storage⁴). Securing the ultimate delivery of these hub initiatives is vital to decarbonising industrial processes and products. It is clear that Europe will not be able to deploy this cost-effective decarbonisation option without investment in the right sized enabling (transport and storage) infrastructure. GCCSI therefore feels it is important that the Innovation Fund should support the development of large-scale and strategically located infrastructure solutions that enable the low cost and full-scale deployment of CCS for industrial clusters. These will serve as a magnet to increase industry engagement and the development of multiple projects in each location, accelerating the development of a broader CCS market within the EU.

Andrew Purvis, GCCSI

The proposed Rotterdam CCS Cluster: the transport of CO₂ by pipeline and ship from major emitting industries to greenhouses and offshore storage sites;
A scientific conference ‘Our common future under climate change’ will be held in Paris, 7th-10th July 2015, upstream of the 21st UNFCCC Conference of the Parties (COP21). CO₂GeoNet is co-organising a parallel session and co-hosting three side events that will support the aims of the conference. CO₂GeoNet will also participate in a R&Dialogue side event. Details of these events are given in the table below.

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<tr>
<th>Date and place</th>
<th>Title</th>
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<tr>
<td>20th June, Farnese Palace, Caprarola, Italy [link]</td>
<td>A dialogue for developing synergies for sustainable energy production: how can biomass, hydrogen and CCS work together to mitigate climate change?</td>
<td>CO₂GeoNet-Sapienza University of Rome, ENEA, the Municipality of Caprarola and R&amp;Dialogue</td>
<td>To contribute to science-society dialogue on the synergistic potential of biomass, hydrogen and CCS to mitigate climate change.</td>
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<td>1st July, The Wesley, London, UK [link]</td>
<td>What geological CO₂ storage can bring to mitigating climate change - UK research perspective</td>
<td>CO₂GeoNet-BGS and UK CCS Research Centre</td>
<td>To draw together key CO₂ storage stakeholders from the UK CCS demonstration projects, small-medium business enterprises and the research community to increase dialogue and to foster research partnerships to tackle challenges identified by the demonstration project operators.</td>
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<td>5th July, Jussieu Tower, Paris, France* [link]</td>
<td>Sharing visions on a low carbon society</td>
<td>R&amp;Dialogue. CO₂GeoNet will participate</td>
<td>To share the vision for a low carbon society built by the participants of the R&amp;Dialogue project whilst enjoying a cocktail and a stunning view over Paris.</td>
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<td>9th July, 17:30 - 19:00, Université Pierre et Marie Curie, Jussieu - Amphí 34, Paris, France [link]</td>
<td>Parallel session 3307- Negative emissions for climate change stabilization &amp; the role of CO₂ geological storage</td>
<td>CO₂GeoNet-BRMG and Mercator Research Institute on Global Commons and Climate Change (Germany)</td>
<td>To address the negative emissions challenge and the role of CO₂ geological storage and present new work on both challenges and opportunities, with a special focus on the production of sustainable bioenergy with CCS (BECCS).</td>
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<td>13th July, Sapienza University of Rome, Department of Earth Sciences, Rome, Italy</td>
<td>The potential contribution of CO₂ geological storage to climate change mitigation, both globally and in Italy</td>
<td>CO₂GeoNet-Sapienza, CO₂GeoNet-OGS and Consiglio Nazionale dei Geologi</td>
<td>To increase CCS visibility and stimulate interest and debate between researchers and other stakeholders working on CO₂ storage and environmental science.</td>
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More details on the proposed side events will be posted on the CO₂GeoNet website and the conference website as they become available.

Rowena Stead, BRGM, France
Ceri J. Vincent, BGS, UK
Samuela Vercelli, La Sapienza, Italy
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