Ambitious commitments for global decarbonisation pledged at the 2015 UNFCCC climate summit in Paris will require large reductions in CO₂ emissions not only in the energy sector, but also in carbon intensive industry (such as cement, iron and steel, paper and pulp, refineries etc.). Storing CO₂ deep underground in carefully selected locations offers the only currently available technology to help these industries to meet the requirements and to allow for future economic growth. This means that CO₂ geological storage will be as important in developed countries as it will be in less developed countries. CCS (CO₂ Capture and Storage) technology is a viable, proven and safe mitigation measure as demonstrated at the Sleipner field in the Norwegian North Sea where CO₂ has been injected for the past 20 years for permanent storage.

The CO₂GeoNet Association has a wealth of experience in CO₂ geological storage research. As a not-for-profit network with over 300 researchers from 19 countries, we are the largest scientific community in this particular field in the world. CO₂GeoNet’s mission is to provide scientific advice, expertise, training and capacity building to all interested parties, including regulators, local communities and the general public. As a UNFCCC accredited non-governmental organisation, we provide multidisciplinary and independent advice to all those who need it. CO₂GeoNet was recently awarded CTCN (Climate Technology Centre and Network) membership and aims to use this mechanism to offer advice to developing countries. CO₂GeoNet is a scientific body able to answer your questions, clarify doubts and share knowledge. This autumn there will be the opportunity to meet us at the three most prominent international events. Representatives from CO₂GeoNet will be present at the COP22 in Marrakesh, Morocco, the GHGT-13 conference in Lausanne, Switzerland and the AGU Fall Meeting in San Francisco, USA. Please, see our activities in the table below and visit our website where you can find information and the latest news on the advancement of CO₂ geological storage.

Marjeta Car,
Leader of Dissemination activities in CO₂GeoNet

In this issue:

- Talk to us!
- ENOS - New exciting research initiative
- GeoEnergy Test Bed - progress with characterisation
- Sulcis summer school on CCS technologies
- ECAC Symposium on adaptation and mitigation measures
ENOS, another initiative of CO₂ GeoNet has been launched: Enabling Onshore CO₂ Storage in Europe – ENOS started officially on September 1st 2016. The project is financed through European Research & Development Programme Horizon 2020, has a budget of 12.5M€ and will last for 4 years. The project draws together 29 organisations from 17 countries. It has been endorsed by the European Energy Research Alliance on Carbon dioxide Capture and Storage Joint Programme - EERA CCS JP.

ENOS will tackle the most urgent issues to enable onshore CO₂ storage in Europe. Storing CO₂ onshore, relatively close to the emission points, would contribute to reducing the costs of CCS and help energy producers and other CO₂ intensive industries to manage their CO₂ emissions locally, thus building public confidence in CCS as a powerful mitigation option that can also contribute to local economic growth.

ENOS aims to develop CO₂ storage onshore in Europe by:

1) Developing, testing and demonstrating in the field, at pilot and experiment sites, key technologies specifically adapted to onshore applications;
2) Integrating CO₂ geological storage into the socio-economic fabric of the concerned territories by involving the local population;
3) Contributing to the creation of a favourable environment for onshore storage across Europe through knowledge-sharing, education, and support for new pilot and demonstration CC(U)S projects.

The main identified hurdles CCS is facing onshore that will be addressed concern:

a. Obtaining additional practical experience to demonstrate further that injection operations onshore can be run safely, efficiently while protecting the local environment;
b. Demonstrating our capacity to understand, detect and manage leakage and/or other potential risks, which is imperative to prove long-term safety and to obtain regulatory permits;
c. Ensuring that calculated storage capacities are sufficiently reliable and also affordable to verify, which is needed to enable investments and the deployment of CCS at industrial scale;
d. Integrating activities related to geological storage of CO₂ into the local economic framework, so that the benefits are also reflected at the local level, which is vital for commercialisation of CCS;
e. Engaging the local population in the storage projects from the early planning phase, without whom project development is unimaginable.

Practical experiments under real-life conditions will be conducted at the Hontomin Technology Platform in Spain, at the Geo-energy Testbed in the UK and the Sulcis Fault Lab in Italy. Additional site studies will be performed at Q16Maas in the Netherlands, LBR-1 in the Czech Republic and at the Sulcis Pilot in Italy.

ENOS strives for accelerating the deployment of CCS, which can only be performed in close cooperation with industrial
The GeoEnergy Test Bed (GTB), a field laboratory initiated by the University of Nottingham and the British Geological Survey was introduced in the November 2015 issue of the CO₂GeoNet newsletter. Since then, two geological characterisation wells have been drilled and shallow geophysical surveys have been carried out. The wells confirmed the presence of water-bearing fractures and thin sand-rich layers in the Mercia Mudstone Group as well as the thick (>40 m) Helsby Sandstone aquifer (equivalent to part of the offshore Bunter Group). The next phase of drilling will start in November 2016 with funding from the UK Energy Research Accelerator (http://www.era.ac.uk/). This will include one cored well to allow laboratory testing of the aquifer and seal properties. When completed, the GTB will include an array of boreholes drilled to different depths. Sensor technologies will be used (both above and below ground) to study the rocks and the flow and properties of underground fluids through natural pathways.

Ceri J. Vincent, BGS, UK
Sulcis Summer school on CCS technologies

The fourth International Sulcis Summer School on CCS Technologies (from June 28th to July 1st 2016) was very well attended by students, graduates and early stage researchers. The school was co-organised by CO2GeoNet and took place at the Sotacarbo Research Center of Carbonia, Sardinia (Italy). After an introductory session the Summer School addressed the topics ‘CO2 capture approaches and technologies’, ‘CO2 utilisation technologies’, and ‘CO2 storage’. The program was complemented by visits to the Sotacarbo pilot platform and laboratories, the Serbariu Old Mine Museum and a guided tour to the impressive underground complex of Porto Flavia as well as excellent social side events. CO2GeoNet contributed with four presentations on ‘Enhanced oil and gas recovery by injecting CO2’, ‘CO2 storage: where we are and new challenges’, ‘Cap rock-reservoir hydraulic characterisation and test implementation - Experiences of Hontomin site’, and ‘Site monitoring’. The Summer School was a great success and benefitted from an expert organising committee, high-level international speakers, and last but not least, enthusiastic participants. We look forward to the fifth edition in summer 2017.

ECAC Symposium on adaptation and mitigation measures

CO2GeoNet was invited to participate in the 16th European Meteorological Society Annual Meeting & 11th European Conference on Applied Climatology (ECAC) (12-16/09/16, Trieste, Italy). Ceri J. Vincent, BGS, UK, CO2GeoNet Chair, presented on ‘why reaching the COP21 targets is important and how CCS can contribute’ in the ECAC Symposium on Climate Change – Adaptation and Mitigation: The Role of Climate Science and Services. This offered the opportunity to communicate the important role CCS can play in reducing emissions and that the technology is flexible and ready to be rolled out globally to a scientific audience working in parallel to understand our changing climate. The presentation attracted several questions on how CCS works, where it is being demonstrated and how security of storage can be ensured. Read more at http://www.emetsoc.org/emsecac-2016/

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