Growing CCS for a sustainable future – Linking local actions for a global solution

Key messages of the 13th CO_2GeoNet Open Forum

San Servolo Island, Venice, Italy, 24 – 25 April 2018

CO_2GeoNet
The European Network of Excellence
on the Geological Storage of CO_2

DELIVERING GLOBAL CCS DEPLOYMENT

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The theme of the 13th CO_2GeoNet Open Forum was "Growing CCS for a sustainable future – Linking local actions for a global solution". The title underlines the urgency to implement full-scale CO_2 Capture, Use and Storage (CCUS) projects across the world, and emphasises the existing diverse CC(U)S opportunities that will enable tailored solutions for individual regions, local communities and industrial entities.

The following key messages extracted from the CO_2GeoNet Open Forum presentations and panel discussions, were voiced by the forum participants which included researchers, regulators and decision makers, industrial stakeholders and CCS project operators, journalists and researchers.

CCS is back on the agenda

Increasingly, national governments are committing themselves to challenging emission reduction targets and decarbonisation strategies. More governments now accept CCS as one of the most important mitigation options to achieve the Paris Agreement Two Degrees Scenario (2DS) than ever before. Impartial stakeholders looking for the optimal decarbonisation solution are now beginning to turn to CCS.

CCS is not just a bridging technology associated with fossil fuel phase-out. Climate models show that CCS will be even more important after 2030, when new emerging technologies (such as hydrogen production, alternative hydrocarbons, etc.) are fully deployed.

Dialogue is key to integrating the necessary climate-change mitigation technologies (CCS, renewables, hydrogen, etc.) and achieving a low emission future.

Industry says: "We need CCS!"

The industrial stakeholders clearly stated "We need CCS"! Leading industrial entities now recognise that industry needs to be sustainable. Industrial initiatives planned around emission clusters and storage hubs are already on the table.

CCS is the only large-scale option currently available for process emissions (e.g. from steel, cement, fertilizers, refineries, natural gas treatment, heavy oil, waste-to-energy, hydrogen production, other

chemical industries). If the hydrogen industry grows as expected (multiplying by a factor of at least 5 by 2050), CCS is needed to ensure this is a low-carbon fuel.

Commercial stakeholders require consistent policies and political support that offers predictability (not necessarily certainty), effective and cost-efficient laws and regulations, reduced costs and increased efficiency through research and development.

No 1.5DS without CCS

Many NGOs have expressed frustration that Europe still behaves as in the pre-Paris Agreement state. The message from the Open Forum was clear: either do CCS or forget about any below 2° scenario!

CCS offers a flexible and adaptable opportunity to meet climate targets through its deployment in different regions in different modes (power, industry process emissions, supporting a hydrogen economy, etc.). Models indicate that, in order to achieve 2DS, 52 Gt of CO_2 must be stored from the power sector plus a further 29 Gt of CO_2 needs to be avoided by 2050 from industries with high process emissions (ETP 2017, IEA). The scale of this action is equivalent to the current oil and gas industry.

In the very short term, it is possible to reach the climate reduction targets without CCS, but from 2025 onwards, CCS is essential. Therefore, actions need to start now in order to ensure that CCS is deployed in time. Excluding CCS from the models results in an exceptionally high cost for achieving 2DS. The longer we delay, the more drastic the actions that will be required. The more ambitious we are in our climate targets, the more we need CCS.

To achieve the Below 2° Scenario (B2DS), net negative emissions of CO_2 are not optional, but mandatory. A clear advantage of CCS is that it is capable of delivering negative emissions at large scale. Biomass currently accounts for 10% of global energy supply. An increasing number of BECCS projects would need to emerge globally in order to achieve net negative emissions, some of which could include adapting existing plants to use biomass plus CCS. However, the supply chain needs to be developed, consistent policies ratified and the resource limitations fully defined.

Regional actions for a global solution

Given the global variations in economic development, available natural resources and social and cultural environments, the optimal emission mitigation solution will not be the same for all regions.

The use of domestic energy resources is essential for non-OECD countries to ensure better social and economic wellbeing. A strong belief exists that energy independence is achievable on a low carbon platform. CCS as a recognised climate-change mitigation technology is suitable for all regions in the world. Regional development is strategic for the EU (and all regions of the world) – therefore a tailored local approach is in line with strategies to achieve global solutions.

Sharing facilities and research efforts through international cooperation is already underway and further encouraged. Alignment and integration of these regional developments wherever possible

will result in greater efficiency. Mechanisms such as Mission Innovation, CSLF and national initiatives can play their role here. In addition, support (in the form of dissemination, technological, financial) for non-OECD countries is essential to facilitate deployment of CCS projects globally.

Large-scale installations already in operation prove that CCS works and that the economics can be positive and manageable. More strategic projects are needed in Europe to roll out CCS and to realise commercial opportunities. Every new installation has the potential to reduce costs. Further pilot and demonstration projects are crucial and an apparent dilemma is should we go small and safe or large and challenging? The consensual answer is start simple – stay flexible – upgrade.

So how do we get there?

Sustained political support is the most important enabler. CCS should form an integral component in national climate-change mitigation strategies. EU legislation is CCS ready.

We now request a level playing field with other climate-friendly technologies – all other low carbon options that are well advanced have all been supported in some way (policy and/or financial) to get them up-and-running. Subsidies and/or incentives and tailored financial mechanisms (Green Climate Fund, International Bank, etc.) should help governments and industry to establish their national CCS plans and to boost commercial uptake of CCS. Political and economic stability is essential as it can take around 10 years to advance from concept to a working CCS project.

Design of (international) hubs and clusters will make CCS even more technologically and economically efficient (particularly for industries with high process emissions). Cost reduction is also expected through optimisation of operations, economy of scale, and international cooperation.

Lack of public awareness is also a key barrier. What climate targets mean for people and the role for CCS need to be more clearly expressed in a relatable manner. New ways of interacting with the public are being developed (e.g. ENOS project at http://www.enos-project.eu/).

Recent studies show that the major concerns of the local population on CCS focus around mismanagement and non-appropriate operating of storage facilities in their neighbourhood. The public demand clear regulations and independent verification.

Climate impacts are global, not local. Everyone (regulators, scientists, engineers, the public, journalists, etc.) has a role to play in preventing negative climate impacts, using their expertise to move towards a sustainable way of life. Fuller dialogue between different sectors will optimise the impact of regional actions for a global solution to climate change.

Full details of the 13th CO_2GeoNet Open Forum are available at
http://conference2018.co2geonet.com/

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About CO_2GeoNet

CO_2GeoNet is the European scientific body on CO_2 geological storage. The Association currently comprises 29 research institutes from 21 European countries, and brings together over 300 researchers with the multidisciplinary expertise needed to address all aspects of CO_2 storage. With activities encompassing joint research, training, scientific advice, information and communication, CO_2GeoNet has a valuable and independent role to play in enabling the efficient and safe geological storage of CO_2. CO_2GeoNet was created in 2004 as a Network of Excellence supported by the EC FP6 programme for 5 years. In 2008, CO_2GeoNet became a non-profit association under French law, active on both the EU and global scene. From 2013, the membership of CO_2GeoNet expanded thanks to the support of the now completed FP7 CGS Europe project. New Members continue to join CO_2GeoNet to further enhance the pan-European coverage and expertise of the Association.

More about CO_2GeoNet at www.co2geonet.com

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