IEAGHG Information Paper: 2017-IP2; CO2 Building Blocks – Assessing CO_2 Utilisation Options

There have been a number of reports recently published on CO_2 utilisation options. In a separate Information Paper, we recently discussed the ICEF Road Map on CO_2 Utilisation (see IEAGHG Information Paper 2016-IP55: http://www.ieaghg.org/docs/General_Docs/Publications/Information_Papers/2016-IP55.pdf).

The report "CO_2 Building Blocks – Assessing CO_2 Utilisation Options" was published by the National Coal Council in the USA. The National Coal Council (NCC) is a Federal Advisory Committee to the U.S. Secretary of Energy. Established in 1984, the NCC provides advice and recommendations to the Secretary of Energy on general policy matters relating to coal and the coal industry[1]. The report was presented at a United States Energy Association seminar in November 2016. A copy of the presentation by Janet Gellici, Chief Executive Officer of NCC given at the seminar can be found at: https://www.usea.org/sites/default/files/event-Gellici%20USEA%20Briefing%20November%202016%20FINAL.pdf.

A fact sheet on the report is presented as an Annex to this IP.

Three key messages from this study are:

1. Geological CO_2 utilization options, including but not limited to CO2-EOR, have the greatest potential to advance CCUS by creating market demand for anthropogenic CO_2.

2. Non-geologic CO_2 utilization options are unlikely to significantly incentivize CCUS in the near- to intermediate-term due to technical, greenhouse gas (GHG) lifecycle considerations and lack of scalability.

3. There is benefit to establishing a technology review process that is as objective as possible to assess the benefits and challenges of different CO_2 utilization technologies and products. Evaluation criteria fall into three broad categories:
    a. Environmental considerations,
    b. Technology/product status and
    c. Market considerations.

    Evaluation criteria can be used to prioritize candidates for RD&D and product investment.

Note: Non-geologic storage options considered in the report include: biological conversion (algae), chemical production (methanol, urea etc.,) mineralisation into carbonates, food products, use in refrigeration etc..

Comments:
It is not surprising that a US based think tank would suggest that the primary utilisation route is CO2-EOR. However I would not disagree with that CO2-EOR offers the most significant route for CO_2 use and it involves permeant storage. The same point was made at the CO_2 utilisation discussion session at GHGT-13 and again at the closing panel by two of the panellists[2] [3].

This study offers a very pragmatic approach to CO_2 utilisation, it acknowledges that there are issues with many of the CO_2 utilisation options under discussion such as GHG emission leakage through use,

[1] http://www.nationalcoalcouncil.org/
[2] http://www.ieaghg.org/publications/blog
[3] http://www.ghgt.info/ghgt-13/ghgt-13-programme/item/plenary-sessions-4

permanence etc., and sets out a process to evaluate the benefits of these technologies before investing R&D dollars. This I believe is an eminently sensible approach which I would hope would be replicated outside the USA as well. In this way we can better quantify the strengths and weaknesses of CO_2 utilisation options and their mitigation potential, which would help qualify (or disqualify) the claims being made by proponents of this technology.

John Gale
04/01/2017