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Challenges related to carbon transportation and storage – showstoppers for CCS?

John P. Banks^a, Tim Boersma^b, Ward Goldthorpe^c

^a Visiting Scholar and Adjunct Professor, School of Advanced International Studies at Johns Hopkins University

^b Senior Research Scholar, SIPA Center on Global Energy Policy, Columbia University, 1255 Amsterdam Avenue, New York, NY 10027.

^c Managing Director, Sustainable Decisions Limited, 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, UK

Foreword by Brad Page (CEO, Global CCS Institute)

A transition to a low-carbon economy over the next several decades is essential to preserve global economic prosperity and protect ecosystems and communities. The Paris Agreement that has recently come into force establishes long-term climate goals and initial thinking about a set of implementation (and review) processes to facilitate such a transition.

Global climate and energy system models continue to show that carbon capture and storage (CCS) is an essential element of a least-cost approach to managing climate change. As with any significant technological transition, a major buildout of supporting infrastructure is required.

Consider the infrastructure investment that was required to make historical technological and social advances possible in: water supply and sanitation; electricity transmission and distribution; cross-border highway systems; cellular telephone networks; the internet and data transmission and storage; and utility-scale wind and solar electricity. In each of these cases, the public and private sectors worked together to make these advances possible and easily accessible to the community.

Likewise, in order to prevent CO₂ emissions from power plants and industrial facilities from entering the atmosphere by making CCS a commercially viable long-term option, a collaborative public and private sector approach across all elements of the CCS chain is required.

There is an old saying in the oil business that goes ‘it all begins with the rocks’, and the same can be said for CCS. While the capture element understandably garners much media attention (as this is the largest cost element of a CCS project and where cost reduction efforts are most focused), the importance of incentivising CO₂ transportation and storage infrastructure is being increasingly recognised. This policy brief adds to that chorus of voices.

CCS projects are advancing and important milestones are being achieved. By the end of 2017, it is anticipated there will be 21 large-sale CCS projects in operation across the power and industrial sectors, with a total CO₂ capture capacity of approximately 40 million tonnes per annum (more than double the number of projects and capture capacity at the start of the decade).

In 2016, the Sleipner CO₂ Storage Project in Norway celebrated 20 years of operation and over 16 million tonnes of CO₂ securely stored. Other significant operational milestones have been achieved in the Americas and Asia.

While this progress is encouraging, it is also vastly inadequate. Much more work is required.

This policy brief specifically highlights the challenges that will have to be addressed to build out CO₂ transportation and storage infrastructure to the scale necessary to meet climate ambitions. These challenges include technical, policy, regulatory and public perception issues.

Overcoming them requires a commitment of resources and focus by public and private sector leaders. To aid in this process, this policy brief recommends a number of focus areas for policy development and enhancement.

As we look forward to the next five years and the putting in place of key enablers to global CCS deployment, this policy brief is a valuable addition to aid in public and policy discussion.

Brad Page

CEO, Global CCS Institute