

# DEVELOPING CARBON CAPTURE AND STORAGE <sup>1</sup>

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There are truths that cannot be denied. First, nature will determine how serious a problem climate change is, not our politicians. Second, it is always cheaper to vent CO<sub>2</sub> into the atmosphere than to capture and store it. Therefore, it is unreasonable to expect carbon capture and storage (CCS) to be deployed on a large-scale without strong climate policy to drive it. The promise of CCS is that it will be cost competitive with other low carbon energy technologies, thus lowering the cost of addressing climate change. These expectations are well founded, based on many studies over the past decade.

The most important thing one can do to accelerate the development and adoption of CCS technology is to create commercial markets. While some markets exist for the utilization of CO<sub>2</sub>, most notably CO<sub>2</sub> for enhanced oil recovery (EOR), they have their limitations. Specifically, the cost for capturing CO<sub>2</sub> from power plants is 2-4 times the cost that EOR operators are willing to pay. Therefore, in the longer-term, there is no substitute for climate policy that puts a high enough price on carbon to create robust markets for CCS. Since the implementation of climate policy is moving at a very slow pace, these climate markets may need a couple of decades to become reality. Therefore, the key question then becomes what should we be doing now to develop CCS so it can be ready when called upon.

The two key overarching goals for a global CCS R&D strategy are (1) proving the viability of large-scale storage and (2) lowering the cost of capture. Without demonstrating the safety of long-term, large-scale storage, the public is unlikely to ever accept using subsurface formations to store large amounts of CO<sub>2</sub>. Without lower costs, CCS will not be able to unlock its true potential as a mitigation technology.

To adequately address these goals, the world will need to invest tens of billions of dollars over the next decade. However, traditional funding from government and industrial investment, revenues from selling carbon permits, etc. are proving inadequate. New, reliable sources of funding are required. One possibility is a small surcharge (less than \$0.001/kWh) on all fossil generated electricity.

We also need to rethink our development strategy. We need to concentrate on a fewer projects rather than spreading the funding out too thin (in many cases for political reasons). We will need to trade quantity for quality, ensuring that a limited number of demonstration projects produce maximum return.

In summary, CCS is critical technology for a secure, clean energy future. It is the only technology that can allow the continued use of our large fossil energy resources while drastically reducing their greenhouse gas emissions. However, progress to date has been much slower than desired, not because of the limitations of the technology, but because of lack of funding to develop and deploy them. Whether our expectations for CCS will be met in the future depends on our commitment to invest in CCS now.

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<sup>1</sup> Thought Leadership and Events, part of the Economist Group: Energy and Utilities Community Blog, published October (2012). See <http://www.management-thinking.org/content/developing-carbon-capture-and-storage>