From Demonstration To Deployment: An Economic Analysis Of Support Policies For Carbon Capture And Storage

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This paper argues that an integrated policy architecture consisting of multiple policy phases and economic instruments is needed to support the development of carbon capture and storage (CCS) from its present demonstration phase to full-scale deployment.

We start with an analysis of the different types of market failures that exist with regard to CCS in its various stages of development, and give policy options for addressing each one; next, we suggest a way to combine these into an integrated policy architecture, featuring predictable transitions from one stage of policy to the next that follow the technological and commercial development of CCS. We highlight the advantages of such an architecture, and the disadvantages of non-integrated or ad-hoc policy.

In particular, the policy architecture we propose addresses the twin issues of *policy certainty* desired by the private sector, and *policy flexibility* desired by policy makers. Given that CCS is a capital-intense technology whose commercial success depends to a large extent on public policy, private sector actors will be hesitant to make large scale investments in the absence of policy certainty. At the same time, given that the development of both CCS and alternative abatement technologies is uncertain, policymakers are unwilling to fully commit to funding CCS. The policy framework we propose is deliberately flexible to adapt to the needs of a maturing technology and public policy makers on the one hand; at the same time its development is structured for a maximum of predictability for the private sector, providing the certainty required to encourage private sector investment. This combination of flexibility and predictability is achieved through the use of 'policy gateways' that explicitly define rules and criteria for when and how policy settings will change.

Our findings extend to bioenergy-based CCS applications (BECCS), which could potentially achieve negative emissions; we conclude that within a framework of correcting the carbon externality, the added environmental benefits of BECCS could be reflected in an extra incentive.