

High-impact CCS prioritization in heavy industries in the United States

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Carbon capture and storage (CCS) is one of the multiple avenues to reduce carbon emissions in the atmosphere. In political and advocacy circles, the conversation around CCS is often binary. Given the variety of sources that CCS can be applied to and the local resources available, more nuances need to be brought to the conversation. Important considerations are the CO₂ purity of the exhaust stream, the size of the industry, the likelihood that the adoption of CCS would lead to fossil fuel lock in or hinder innovation, and the supply chain surrounding carbon capture. This study combines these considerations to create a ranking system that focuses on hard-to-abate industrial sectors and outlines the industries to prioritize for the deployment CCS in the United States. This ranking system is proposed for the near-term and mid-century to account for the deployment of CCS and innovation in alternative technologies. In addition, the present study investigates the geographical distribution of industries and local resources. It identifies potential clusters of point source carbon capture and nearby CO₂ storage opportunities (i.e. saline aquifers, mafic and ultramafic rocks for in-situ CO₂ storage, mafic and ultramafic industrial wastes for ex-situ CO₂ storage). The goal of this study is to highlight the applicability of CCS in heavy industries, and to generate more informed conversations that would lead to more targeted policies.