490

Direct Air Capture as a System Good: Comparing Public and Market-Based Pathways to Scale

Björn Steigerwald, Christian von Hirschhausen
Workgroup for Economic and Infrastructure Policy, TU Berlin, Berlin, Germany

Extended Abstract

Download file

Abstract Summary

Direct Air Capture (DAC) is increasingly recognized as an important component of climate mitigation pathways compatible with limiting global warming to 1.5°C. Integrated Assessment Models (IAMs) project large-scale deployment of DAC by mid-century, yet real-world capacity remains far below these expectations, with global deployment still below 0.05 $MtCO_2$ per year as of 2025 (IPCC 2022; International Energy Agency 2022; von Hirschhausen et al. 2025). While high costs and low technology readiness levels contribute to this gap, growing evidence highlights governance and coordination failures as equally important barriers (Sievert, Schmidt, and Steffen 2024; Frattini, Becattini, and Mazzotti 2024). This paper analyzes DAC as a system good, requiring coordination across interdependent stages and actors (Beckers, Gizzi, and Jäckel 2012). It compares two governance approaches: a public coordination model, based on centralized institutions and regulatory integration (Edenhofer et al. 2023; Lessmann et al. 2026), and a market-driven model, based on decentralized voluntary markets and private contracting (Sovacool, Baum, and Low 2023). The paper asks how these models address the coordination challenges underlying the DAC diffusion gap.?