
Carbon Capture and Storage: Global Progress, Technology Status, and R&D Priorities

Mohammad Abu Zahra

Global CCS Institute, UAE

mohammad.abuzahra@globalccsinstitute.com

Carbon Capture and Storage (CCS) has emerged as an essential pillar of global climate mitigation strategies, with more than 200 projects in operation or development worldwide. Despite significant progress in scaling up deployment across power, industry, and emerging carbon removal pathways, CCS technologies still face challenges in cost, efficiency, integration, policy and regulatory frameworks. This talk will provide an overview of the current global status of CCS, highlighting regional developments, project pipelines, and policy drivers. It will also review the maturity and performance of capture technologies, identifying both successes and bottlenecks. Finally, the discussion will outline priority areas for research and development—including next-generation capture materials, modular systems, monitoring and verification, and infrastructure integration—that are critical to accelerate deployment, reduce costs, and enable CCS to deliver its role in achieving net zero.