Aditi Rajpal

Climate and Energy Researcher | Carbon Capture and Storage | Bridging Science, Policy, and Industry

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Profile

Final-year PhD candidate in Chemical Engineering at the University of Cambridge, specialising in Carbon Capture and Storage (CCS), with experience bridging technical research, policy-advising, and stakeholder engagement. Research focuses on safe geological carbon storage in collaboration with Shell, alongside engagement with UK policymakers, regulators, research councils, and international climate networks. Experienced in translating complex scientific evidence into actionable insights for policy and industry audiences.

Science–Policy & Stakeholder Engagement

Science–Policy Engagement | UK Climate and Energy Transition

- Presented research evidence on geological carbon storage to the Engineering and Physical Sciences Research Council (EPSRC), contributing to discussions on the UK's carbon storage roadmap
- Provided evidence-based recommendations on net-zero infrastructure, CCS business models, technology deployment, and international learnings to policymakers across the Department for Energy Security and Net Zero (DESNZ), Department for Environment, Food and Rural Affairs (DEFRA), and UK House of Commons
- Presented technical evidence on CCS deployment to regulators including the North Sea Transition Authority (NSTA), Environment Agency, and Ofgem
- Invited to high-level roundtable discussions with the Climate Change Committee, DESNZ, Cabinet Office, and Tyndall Centre for Climate Research on integrating social intelligence into climate policy models

Centre for Science and Policy (CSaP), University of Cambridge

Policy Intern

- Led a benchmarking project examining the evolving landscape of policy-brokering institutions across the UK, informing CSaP strategy and presenting findings to its Advisory Council comprising senior leaders from research councils, government departments, Cambridge colleges, and BBC
- Conducted analysis on models for translating academic expertise into policy decisions, contributing to Cambridge-led initiatives including the Evidence Exchange consortium and the Rokos School of Government
- Developed policy briefings, news articles, and summary notes for government ministers
- Developed policy scenarios on biomedical and clinical research in embryo gene editing for a policy workshop with the Nuffield Council on Bioethics and Cambridge Reproduction

Research Experience

University of Cambridge, PhD in Chemical Engineering

Apr 2023 – Apr 2027

Research: Carbon Capture and Storage for Net Zero

Supervisor: Prof Dame Lynn Gladden

- Investigating subsurface carbon dioxide storage and leakage risks to strengthen the evidence base for safe deployment of CCS in geological reservoirs
- Working in collaboration with Shell International Exploration and Production Inc. Houston and Shell Energy Transition Campus Amsterdam on carbon storage in saline aquifers in the UK North Sea
- Applying advanced magnetic resonance imaging (MRI) techniques to analyse rock cores and fluid physics
- Technical expertise in core-flood experiments under reservoir conditions, using real rock cores at high temperatures and pressures to replicate subsurface storage environments
- Developing computational approaches including numerical simulations, signal processing, and image processing using MATLAB
- Systems-level understanding of CCS deployment through engagement with UKCCSRC, industry partners, and international CCS networks, spanning technical, regulatory, economic, and policy considerations
- Undertook field visits to carbon-capture facilities and HyPER blue hydrogen project, Cranfield and the Carbon Capture Pilot Plant at Imperial College London
- Examined reservoir rock cores from the Rotliegend Group in southern North Sea gas fields, including formations relevant to current CCS developments such as Viking, Camelot, and Poseidon

Leadership, Mentoring and Science Communication

- Expert Panellist, Institute for Manufacturing, University of Cambridge: Invited to discuss thought leadership, CCS, and interdisciplinary policy engagement as case studies on the role of engineers in political decision-making for the Construction Engineering Master's cohort (2026)
- Commonwealth Mentoring Programme (FCDO): Selected mentor supporting current Commonwealth scholars (2025–present)
- Davidson Inventors Challenge (IChemE): Mentored 30+ school teams in collaboration with the Institution of Chemical Engineers, applying chemical engineering principles to sustainability challenges (2023–present)
- Cambridge Africa Mentoring Programme: Supported prospective postgraduate applicants from Africa (2025–present)
- Senior Demonstrator, Department of Chemical Engineering, University of Cambridge: Supported second-year chemical engineering undergraduate laboratory training and assessment (2023–present)
- Outreach, Department of Chemical Engineering, University of Cambridge: Delivered talks on using MRI for chemical engineering to 100+ Arkwright Scholars for outreach

Conferences and Professional Development

- Oral Presentation, Chemical Engineering and Biotechnology (CEB) Conference, University of Cambridge
- Invited Speaker, big-picture talk on carbon storage, Wolfson College, University of Cambridge

- Selected Speaker, West Hub Research Café on Sustainability, University of Cambridge
- Poster Presentation, UK Carbon Capture and Storage Research Centre (UKCCSRC) Knowledge Exchange Conference
- Poster Presentation, Supergen Net Zero Conference, Birmingham
- Continuing Professional Development (CPD) specialist training on CCS deployment by the UKCCSRC
- Science communication workshops by the UKCCSRC

Education

University of Oxford

MSc Theoretical and Computational Chemistry | 2021–2022

- Commonwealth Master's Scholarship (Foreign, Commonwealth & Development Office)
- Computational research on DNA nanotechnology using supercomputing facilities

St Stephen's College, University of Delhi

BSc Chemistry with Minor in Mathematics | 2018–2021

- CGPA: 9.7/10

Awards

- Fully funded PhD award in collaboration with Shell (2023 – present)
- Travel grants from the Engineering and Physical Sciences Research Council (EPSRC) to undertake field visits to UK carbon capture facilities and blue hydrogen projects (2026)
- Awards from the UKCCSRC to participate in Net Zero Conferences across the UK (2025 – 2026)
- Commonwealth Master's Scholarship, Foreign, Commonwealth & Development Office (2021 – 2022)
- Meritorious Award, Faculty of Science, University of Delhi (2020)
- Virendra Kumar Memorial Prize for highest proficiency in laboratory work (2019)

Expertise

Climate and Energy: Carbon Capture and Storage (CCS), climate action, net-zero technologies, energy transition

Policy and Strategy: Climate policy, governance, science–policy engagement, evidence-informed policymaking, stakeholder engagement

Technical: Experimental and computational research, MRI, core-flood experiments, reservoir analysis, image processing, numerical modelling, Python, MATLAB

Communication and Leadership: Science communication, public engagement, mentoring, knowledge exchange