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## Advancements in CCS costs – trends and strategies for cost reduction

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### Abstract

Carbon Capture and Storage (CCS) is a critical solution for achieving net-zero emissions, particularly for hard-to-abate industries such as cement, steel, and chemicals, as well as the decarbonization of power generation. As the global CCS industry expands, advancements in capture, transport, and storage technologies are driving cost reductions, improving feasibility, and accelerating deployment.

This presentation will explore the latest developments in CCS cost structures, highlighting key factors influencing costs and emerging strategies for cost reduction. With capture representing the largest share of CCS expenses, the latest improvements in established and novel CO<sub>2</sub> capture methods will be examined, assessing their applicability, maturity, and cost-effectiveness across industries.

The examination of cost trends of completed FEED studies and deployments signals that, adjusted for inflation to a USD2023 basis, the costs of capture for coal combustion and natural gas combustion point sources (Figures 1 & 2) have been declining after considering the effects of inflation on studies and deployments, with a more modest inflation-adjusted fall in hydrogen production costs of CO<sub>2</sub> capture (Figure 3). The presentation will discuss several of the strategies for cost reduction that sit behind these curves, including the development of enhanced solvents and capture technologies, improved host site energy integration, and constructability improvements.

Despite over 620 identified CCS projects worldwide, cost transparency remains a challenge, with estimates influenced by inflation, resource constraints, and limited public data. This discussion will provide insights into cost trends, uncertainties, and the role of economies of scale in shaping future CCS investments. By addressing these critical aspects, this session aims to support informed decision-making for policymakers, industry leaders, and project developers working to accelerate CCS deployment globally.

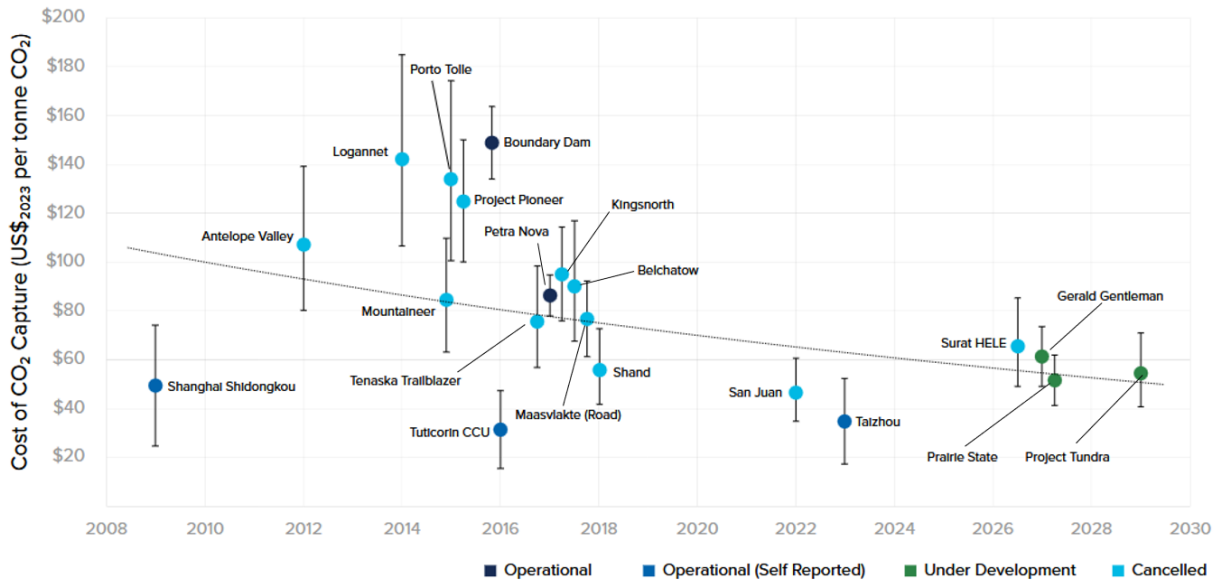


Figure 1: Trend in the Cost of Capture from Coal Combustion Sources

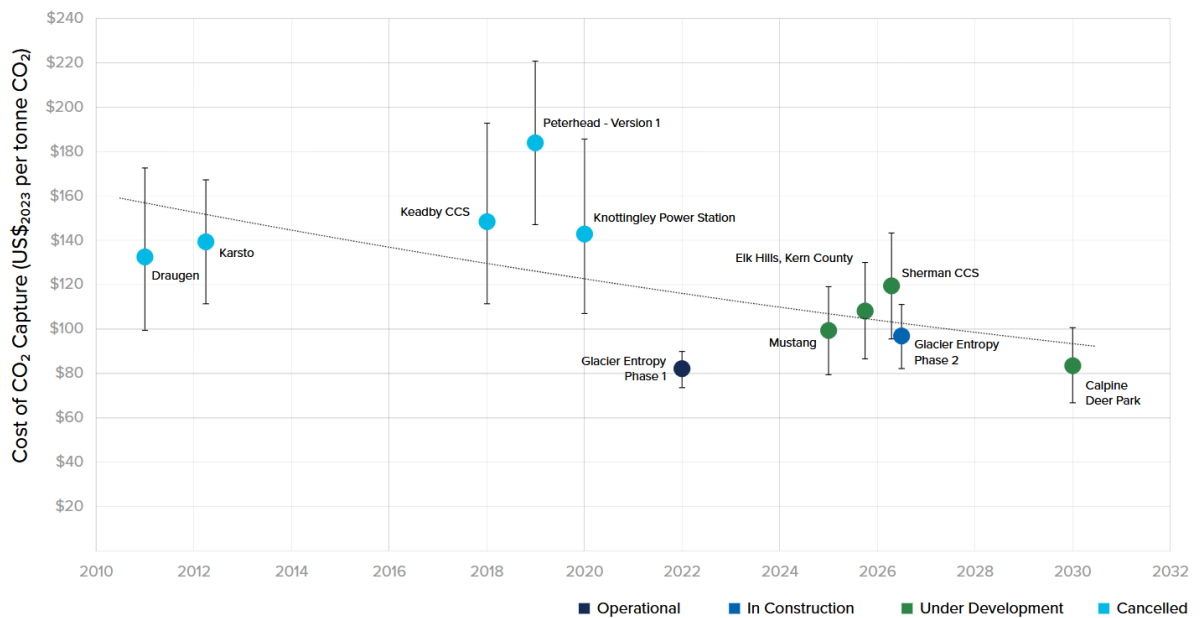


Figure 2: Trend in the Cost of Capture from Natural Gas Combustion Sources

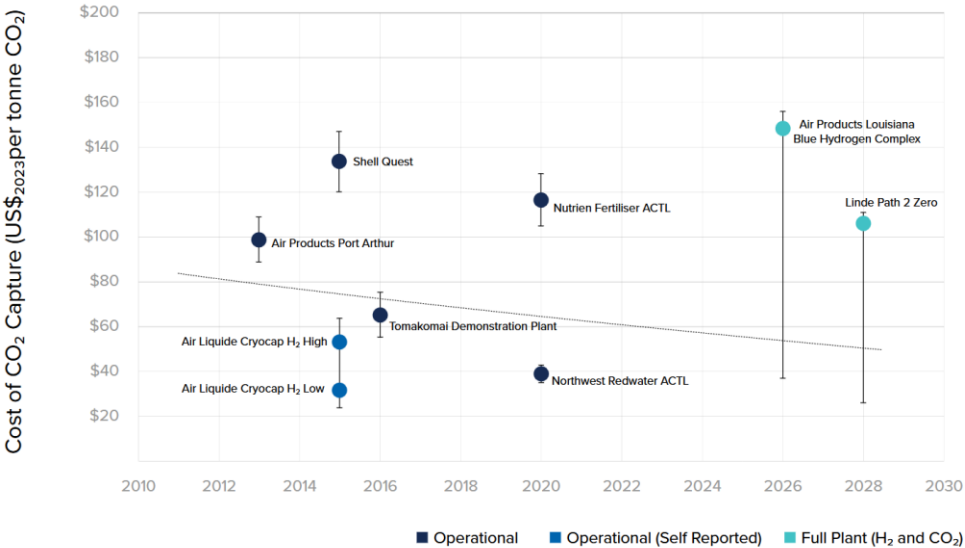


Figure 3: Trend in the Cost of Capture from Hydrogen Production Streams

Keywords: CCS; Costs; Capture; Modelling; Cost Trends