

Rio Tinto and Hydro partner on carbon capture technologies for aluminium smelters

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[Rio Tinto](#) and Hydro will join forces to identify and evaluate available carbon capture technologies for future implementation in the aluminium electrolysis process. The companies have signed a partnership agreement that provides for the sharing of certain information, results and costs covering specific R&D activities from lab tests with external suppliers to larger, on-site pilots, with the aim of creating improved offerings of commercially viable carbon capture technologies from relevant suppliers.

Together, the partners expect to invest approximately \$45 million over five years to support this initiative, with most of the work conducted at Rio Tinto's facilities in Europe and Hydro's facilities in Norway. Beyond this collaboration, both companies will continue to pursue substantial decarbonisation efforts independently.

Anode consumption during the electrolysis process accounts for approximately three quarters of a smelter's direct CO₂ emissions. For several years, scientists from Rio Tinto and Hydro have been exploring different carbon capture technologies as complementary solutions to help each company meet their climate targets, in addition to the development and scaling up of carbon-free aluminium smelting technologies such as Hydro's HalZero technology and Rio Tinto's participation in the ELYSIS joint venture.

Rio Tinto Chief Executive Jakob Stausholm said: "Rio Tinto is committed to reaching net zero emissions from our operations by 2050, and we know that achieving our climate objectives will require a portfolio of solutions. By working in partnership with Hydro to assess certain carbon capture technologies for aluminium smelters, we are finding better ways to leverage our complementary networks and R&D capabilities to address the climate change challenge."

Hydro President and CEO Eivind Kallevik said: "Hydro is accelerating our ambitious roadmap to achieve net-zero aluminium production by 2050 or sooner, advancing solutions across every step of our value chain - from mine to metal. Carbon capture technologies are critical to decarbonising existing smelters, and our partnership with Rio Tinto will amplify efforts to develop fit-for-purpose solutions that can accelerate the aluminium industry's transition towards net-zero production."

Capturing carbon from aluminium smelter flue gas, with CO₂ concentrations around 1% (vol.), requires adapting direct air capture technologies for higher concentrations or point source technologies for lower concentrations. In both cases, the current technology readiness level is low and requires significant development efforts to mature from laboratory to commercial scale. The collaboration between Rio Tinto and Hydro aims to speed up this development process to abate greenhouse gas emissions from smelters.

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