

# DOE backs Rio Tinto led team to explore carbon storage at Tamarack

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The US Department of Energy has awarded \$2.2 million of funding to a Rio Tinto-led team to explore carbon storage potential at the Tamarack nickel joint venture in central Minnesota.

Rio Tinto has assembled a team of climate innovation and research leaders to explore new approaches in carbon mineralisation technology as a way to safely and permanently store carbon as rock. Rio Tinto will contribute \$4 million in funding for the 3-year project, in addition to the funding from the Department of Energy's ARPA-E Innovation Challenge.

Carbon mineralisation uses natural chemical reactions to convert captured carbon dioxide (CO<sub>2</sub>) into rock and store it underground. It has the potential to be an important technology in meeting global climate goals and is now being used at large scale by the world's leading carbon mineralisation company Carbfix in Iceland.

Rio Tinto's technical experts will work with partners including the Department of Energy's Pacific Northwest National Laboratory (PNNL), which has demonstrated carbon mineralisation technology in Washington state; Columbia University; Carbfix; and Advantek Waste Management Services. Talon Metals, the majority owner and operator of the Tamarack Nickel Project and Rio Tinto's joint venture partner, is contributing ore body knowledge and land access for scientific field work.

Rio Tinto Chief Scientist Dr Nigel Steward said "Our aim is to deliver carbon storage solutions that can help to meet climate targets by reducing and offsetting emissions from our operations and in other industries, and to explore the emerging commercial opportunities carbon storage may offer at Rio Tinto sites around the world. We will be working with leading researchers and innovators to prove the carbon storage potential of the Tamarack site and develop mineralisation solutions that can be used not just here but at other similar locations."

PNNL CO<sub>2</sub> subsurface sequestration expert Todd Schaef said "This work will leverage the knowledge gained from PNNL's Wallula Basalt Carbon Storage Pilot Project, the only supercritical CO<sub>2</sub> injection in basalt demonstration in the world. We will be developing forward-looking carbon storage strategies with Rio Tinto and the broader team. PNNL stewards a suite of capabilities that allow us to look at real-time CO<sub>2</sub> interactions with rocks under extreme conditions. We are proud to bring interdisciplinary expertise with computational scientists, geochemists, and engineers who have been researching the subsurface mineralisation of CO<sub>2</sub> for decades."

Columbia Climate School Founding Dean Sir Alex Halliday said "We are truly excited by the opportunity that this partnership brings to rapidly advance carbon management technologies at scale. This is an important project and a superb example of the work for which the Columbia Climate School was established; bringing climate knowledge to action through transdisciplinary projects with critical public and private partnerships. We look forward to much more to come."

Carbfix CEO Dr. Edda Aradottir said "This project will bring together leading industrial players, academics and experts demonstrating the international partnerships needed for accelerated climate action. Carbfix is a global pioneer in carbon mineralization with a proprietary technology that can play a vital role in climate action, having over a decade long experience in safely injecting and storing CO<sub>2</sub> from emission sources as well as the atmosphere. We are excited to bring our expertise to this partnership and help find solutions for the unique geological conditions found at the Tamarack site."

Talon Metals CEO Henri van Rooyen said "Rio Tinto has assembled a uniquely qualified team of scientists

and innovators to explore new approaches to harness carbon mineralisation as a way to safely and permanently store carbon sourced from hard-to-abate industries and carbon removed from the atmosphere.

"Talon is pleased to host this project here in Aitkin County Minnesota, which will be at the forefront of new approaches to climate science."

Analyses by the UN Intergovernmental Panel on Climate Change show that billions tons of CO<sub>2</sub> must be removed from the atmosphere in order to keep global warming to less than 2°C, and that this will not only require deep reductions in emissions but also carbon dioxide removal technologies. While Rio Tinto is prioritising emissions reductions at mines and smelters, it is also exploring the potential role of carbon capture and mineralisation to safely and permanently store carbon in solid form.

#### Notes to editors

Tamarack is a nickel, copper and cobalt project located in central Minnesota that is currently progressing towards feasibility studies. The project is managed by Rio Tinto's joint venture partner Talon Metals, which holds a 51 per cent share and has a right to earn-in to acquire up to 60 per cent.

Until now, large scale carbon mineralisation projects have focussed on areas with certain types of rock formations known as basaltic lava geology, such as Carbfix's sites in Iceland. In contrast, the Tamarack Nickel Project includes a large bowl of what is known as porous ultramafic rock. While this bowl sits outside the resource of nickel and other battery minerals, it has the potential to safely store hundreds of millions of tons of carbon in solid form through natural reactions.

The project will include laboratory studies and field work to confirm the carbon storage potential of the site, understand the area's hydrology and assess different carbon mineralisation technologies, developing a roadmap by 2025 to guide decisions on implementation.

The Tamarack site is also planned to host the first deployment of climate technology start-up Carbon Capture's innovative Direct Air Capture technology, which captures carbon dioxide from the atmosphere and offers a potential supply source of carbon for mineralisation. Rio Tinto has invested \$4 million in Carbon Capture to support the development of its technology and feasibility studies for the deployment at Tamarack are now underway.

Rio Tinto is also partnering with Carbfix to help deliver the world's first carbon mineral storage hub in Iceland and implement carbon capture and mineral storage at the ISAL aluminium smelter.

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