

TerraFixing

Fixing global warming

Increasing levels of CO₂ in the atmosphere has been shown to correlate to the increasing average global surface temperatures which has led many researchers and companies to invest time and effort into finding ways to effectively reduce the amount of CO₂ entering the environment or to capture CO₂ directly from the air. To meet the Paris climate accord target of a global temperature increase of less than 2°C in this century, it is estimated that at least 20% of the GHG reductions must come from direct air capture (DAC) technologies.

When considering DAC as a solution to reducing Canada's GHG emissions, there are two major challenges:

- Current technologies are too expensive, with costs surpassing the current U.S. DOE goal of 27-39 \$/tonCO₂; and
- The cold Canadian climate makes current DAC technologies unviable for the majority of the country. Today's DAC technologies use absorption for CO₂ capture which would freeze in Canada.

TerraFixing's mission is to capture and concentrate CO₂ at the lowest \$/tonCO₂ in order to make DAC a fiscally viable solution to global warming. Our patent pending technology was carefully designed by incorporating the physical location of the process into the equation, thereby minimizing the operating and capital costs. As a result, our simple yet scalable DAC technology is geared towards cold dry climates with operating energies as low as 1 MWh/tonCO₂. Our innovative technology utilizes a simple process with only five unit operations and uses industrially proven materials efficiently at moderate temperatures and pressures to keep capital costs low. Our technology is also fundamentally different from that of many other DAC companies which are based on absorption. Our technology instead employs adsorption, allowing its implementation in cold climates such as those in Canada, Norway, Alaska, Russia, Finland, Greenland, Tibetan plateau, and Antarctica.

TerraFixing's prototype is currently deployed in Ottawa and captures roughly 100 gCO₂/day from fresh cold Canadian air. We are now working tirelessly to scale up our process' capacity to capture 3 ton/day (1000 tonCO₂/year). This technology can be used to capture and reduce GHG emissions from the oil and gas industry from a separate location from the source.

Business Opportunity

The global market demand for CO₂ capture technologies is booming because of carbon pricing. In Canada, a 191 MtonCO₂ market exists from the oil and gas industry alone. If the Canadian federal carbon tax rate increases from the current \$40/tonCO₂ to \$170/tonCO₂ in 2030, the natural gas industry's taxes could be close to \$32 billion CAD.

As part of our business and commercialization plan, we can provide a CO₂ removal service to the oil and gas sector in order to reduce their annual carbon taxes at a discounted rate. We estimate that with the carbon price set for 2030, we can offer a 10% discount on the carbon tax which can provide a revenue stream of approximately \$80/tonCO₂ in 2025 to \$150/tonCO₂ in 2030. Additional alternate revenue streams include the utilization of CO₂ for concrete, or sold to the healthcare, pharmaceutical or food & beverage industry for example. Sales and revenue projections estimate that TerraFixing could break-even in 2024, be profitable in 2025, and by 2030, total revenues could exceed 1 billion CAD.

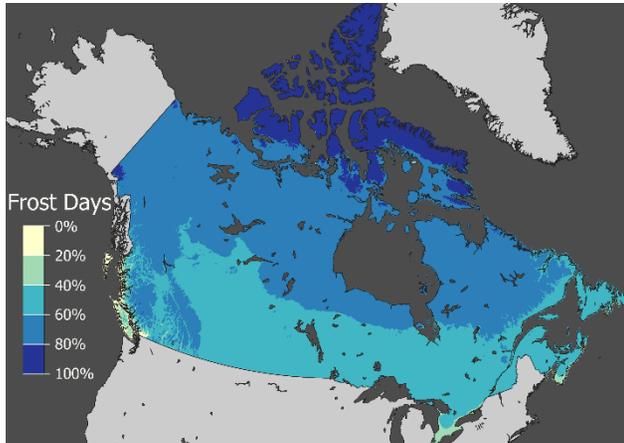


3 tonCO₂/day unit

Did you know?

TerraFixing offers the only viable DAC technology for Canada.

Currently available technologies have severe limitations that prevent them from working in particular geographical locations due to the ambient atmospheric conditions. For absorption technologies from those at Carbon Engineering, Global Thermostat, and Climeworks, it's the temperature at which the absorbent freezes.

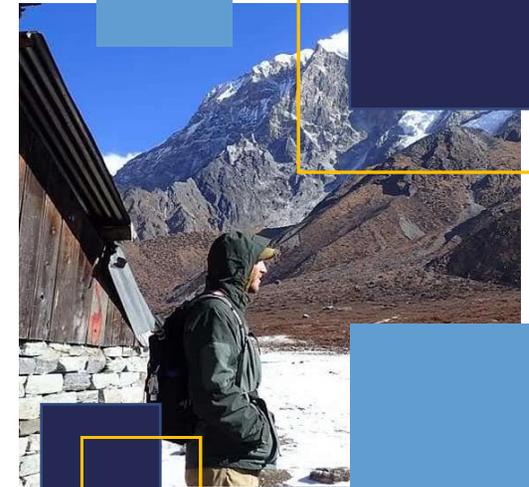
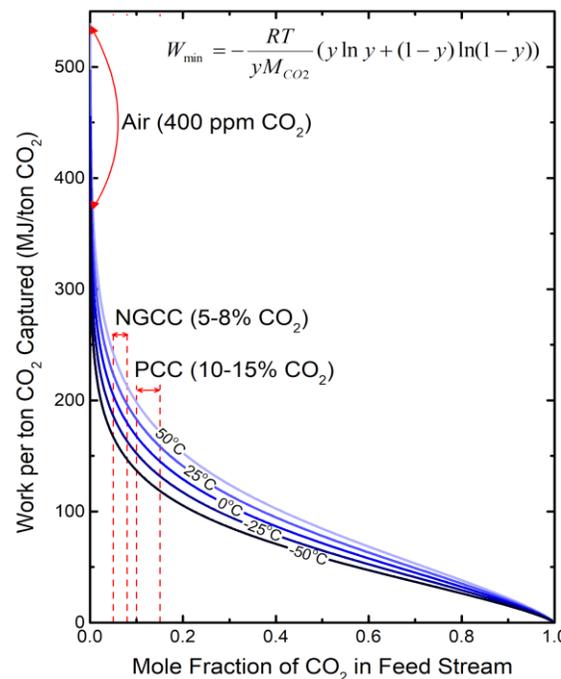


In Canada, 98% of the country experiences 40% or more frost days within a year. This means that an absorption technology in Canada would be inoperable for over 40% of the year making them not viable in cold climates. Instead of using absorption, our innovative technology employs adsorption allowing it to run all year and can even benefit from Canada's abundant frost days.

Did you know?

Separations require less energy at lower temperatures.

According to the second law of thermodynamics, the minimum energy required to capture and concentrate CO₂ is higher for increasingly dilute CO₂ sources. Yet, this same law also indicates a temperature dependence: the work required to capture and concentrate CO₂ at 50°C requires 45% more energy than capturing and concentration CO₂ at -50°C. Thus, it is favorable to perform DAC separations at low temperatures making Canadian climates ideal.



TerraFixing can reduce your GHG emissions.

Partner with us to be part of the solution.

www.TerraFixing.com

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