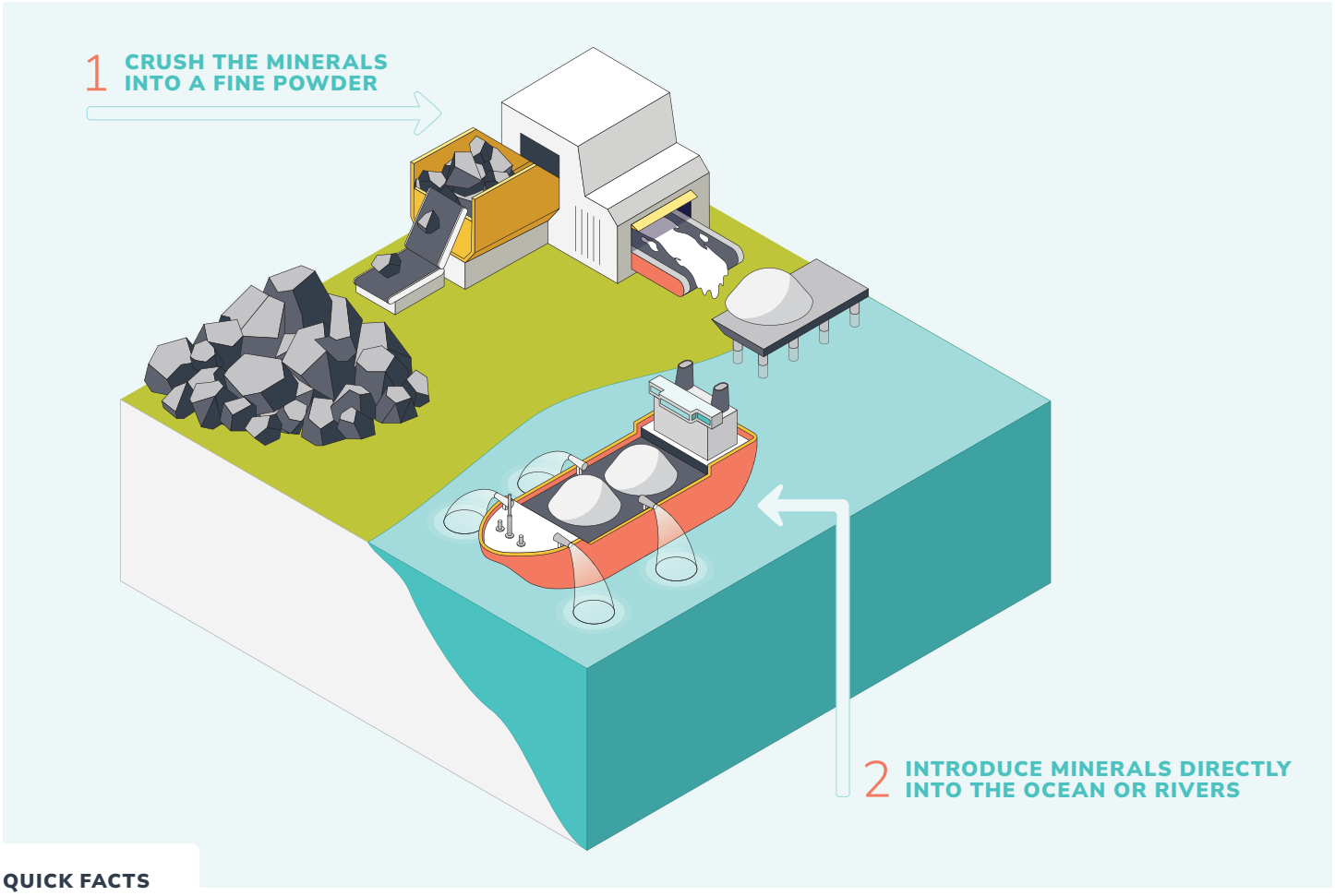
Carbon removal is Ocean Alkalinity Enhancement

carbon removal canada

Restoring ocean health while removing carbon



QUICK FACTS

- Future Estimated Cost: $40 - $260 per tonne of CO_2
- Potential 2050 Global Capacity: 1B - 100B tonnes of CO_2 per year

What is carbon removal?

Carbon removal is the process of cleaning up carbon dioxide (CO_2) *already in the atmosphere* and storing it away for centuries or longer. Even if we cut emissions significantly, Canada cannot reach net-zero without also scaling carbon removal solutions to counterbalance any residual emissions. Beyond net-zero, carbon removal can help tackle historical emissions and turn back the clock on the worst impacts of climate change.

Carbon removal's potential in Canada

Carbon removal isn't just climate action, it's also an economic opportunity. Our research shows it will create jobs, position Canadian industries to compete globally, and make net-zero dramatically more affordable.

$80B economic boost to Canadian GDP

$13B in annual investment catalyzed across Canadian industries

40% - 70% cost savings on Canada's path to net-zero

How does Ocean Alkalinity Enhancement work?

Think of: Giving the ocean an antacid.

The ocean is the world's largest carbon sink, naturally absorbing about 25% of all CO_2 emissions. But as it absorbs more carbon dioxide, seawater becomes more acidic—damaging marine life and reducing the ocean's ability to store additional carbon. Ocean Alkalinity Enhancement (OAE) solves both problems by adding naturally-occurring minerals to seawater.

Just like antacids neutralize stomach acid, OAE minerals make seawater less acidic. This allows the ocean to safely absorb and store more CO_2 from the atmosphere. The carbon gets locked away in the ocean for thousands of years. Canada can also use River Alkalinity Enhancement (RAE) to treat rivers before water flows into the ocean, multiplying the impact.

These technologies don't just remove carbon; they can also help restore fish habitats. Ocean acidification has harmed shellfish, coral reefs, and the fish populations that depend on them. By reducing acidity, OAE creates healthier conditions for marine ecosystems to recover, protecting Canada's valuable fisheries and the coastal communities that rely on them.

Canada has everything needed to lead in OAE: abundant minerals, long coastlines, and maritime expertise. This technology offers a chance to capture billions in the growing carbon removal market while protecting the ocean ecosystems that sustain our fishing industry and coastal economies.

Why Canada?

1 **WORLD'S LONGEST COASTLINES**
Canada has more coastal access than any other country, providing unparalleled opportunities for large-scale ocean deployment

2 **ESTABLISHED MARINE INDUSTRIES**
Existing shipping, offshore energy, and fisheries sectors provide workforce expertise and infrastructure for ocean-based operations

Co-benefits from OAE

RESTORE FISH HABITATS
OAE reduces ocean acidification, which is key to restoring marine ecosystems. This restoration facilitates the return, breeding, and rebuilding of salmon and other marine populations.

RURAL COMMUNITY JOB CREATION
OAE's flexibility in site location makes it ideal for rural economic development, creating jobs in communities across Canada.

INDUSTRIES SUPPORTED

Mining · Fishing · Waste Management

Project snapshot

A shipping container being used to house dosing and monitoring systems for an OAE demonstration project in Tufts Cove, Nova Scotia.

CARBONRUN
Pictou County, NS. *Operational.*

PLANETARY
Halifax, NS. *Operational.*

Canada's carbon removal capacity across technologies

106K	12.4M
Current	Planned

12M TONNES OF CARBON REMOVAL CAPACITY IS EQUIVALENT TO:

Taking 3.6M cars off the road

Completely decarbonizing all domestic air travel

Canada is ready for removal

Visit the Carbon Console to explore more projects, technologies, and companies