

CLIMATE RESTORATION:



SOLUTIONS TO THE GREATEST THREAT FACING HUMANITY AND NATURE TODAY

THE FOUNDATION FOR CLIMATE RESTORATION
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Humans and the ecosystems on which we depend require a climate similar to the one in which we evolved and flourished. We have the technology and finance now to reclaim that climate. What we need is the commitment to do so.

Climatologists tell us that atmospheric CO₂ of up to 300 parts per million (ppm) has proven safe for humanity long-term. Nothing higher has passed that test. We also know that reducing emissions,

while needed, will not reduce atmospheric CO₂ back to safe levels.

The last time CO₂ reached today's levels was about 3 million years ago; camels roamed the Arctic. Would 8 billion humans survive conditions so radically different from those that enabled the growth of agriculture and civilization? The answer is likely "No."

THE EMERGING FIELD OF CLIMATE RESTORATION SETS AN EXPLICIT NEW GOAL: ENSURE THE SURVIVAL OF HUMANITY BY RESTORING CO₂ TO LEVELS PROVEN SAFE FOR HUMAN CIVILIZATION, BY THE YEAR 2050.

Ensuring the survival of humanity will require lowering atmospheric CO₂ from today's 415 ppm to below 300 ppm. We can achieve this, by 2050, by removing 50 GT of CO₂ from the air every year for about two decades.

To be considered climate-restoration solutions, CO₂-removal methods should be:

PERMANENT: They keep CO₂ securely out of the atmosphere for at least a century;

SCALEABLE: Within a decade they can be ready to remove and store at least 25 GT of CO₂ per year (in case only two are used); and

FINANCEABLE: Funding is already available or ready to be mobilized.

WHILE NOT YET WIDELY KNOWN, BOTH THE TECHNOLOGY AND FINANCING METHODS ALREADY EXIST TO RECLAIM THE SAFE AND HEALTHY CLIMATE WE ENJOYED BEFORE THE INDUSTRIAL REVOLUTION.

PROOF: FROM AIR TO STONE

In Iceland, Climeworks and the CarbFix2 project now capture CO₂ directly from the air and pump it into deep formations of porous basalt. The CO₂ binds with minerals, particularly calcium, and turns to carbonate rock (like limestone) in about a year.

While now operating on a modest scale, this project and others like it show that we have the technology, right now, to draw all the excess CO₂ out of the atmosphere and sequester it safely and permanently.

If the world were to mobilize around the goal of climate restoration, enough carbon-removal machines could in principle be built to safely sequester all trillion tons of excess CO₂ by 2050. It would cost an estimated \$100 trillion—about \$3 trillion per year. Government funding could be made available—the world spends about \$2 trillion a year on arms—but there is no evidence yet that the needed climate restoration funding will be forthcoming.

COMMERCIAL MARKETS CAN PAY FOR SEQUESTERING ALL EXCESS CO₂

Instead, climate restoration is likely to be financed by strong commercial markets. Two are large enough: the market for rock for paving and construction; and the market for fish and seaweed for food.

At least one company, Blue Planet Ltd, today combines CO₂ with calcium to create carbon-negative, synthetic limestone. The limestone then replaces rock dug from quarries, and makes high-quality aggregate for concrete.

By 2030, substituting carbon-negative limestone for quarried aggregate could pull 50 GT of carbon a year from the atmosphere. Permanent carbon storage would thus be financed by the market—simply by selling high-quality rock and aggregate.

WHEN THE OCEANS BLOOM, THEY SEQUESTER CARBON

Highly promising methods are under development to stimulate the growth of carbon-sequestering kelp forests as well as localized, temporary algal blooms. Growing seaweed also restores marine fisheries by providing shelter and food for fish. The sale of fish would pay for fertilizing parts of the ocean to grow the kelp and algae.

ARE THESE METHODS SAFE?

In nature, atmospheric CO₂ drops as ocean flora and fauna sequester it into limestone and underwater biocarbon stores. The climate-restoration solutions above have been developed through “biomimicry” and “geomimicry,” copying the natural processes that have regulated CO₂ levels for millions of years—which also correlate with recovery from previous mass extinctions.

WHAT CAN ORGANIZATIONS AND INDIVIDUALS DO?

Join the Global Coalition for Climate Restoration: Declare your responsibility and accountability for the survival and flourishing of humanity, and invite others to join you and hold you to account.

We invite you to visit F4CR.org to learn more and join the Global Coalition for Climate Restoration today.

info@f4cr.org // f4cr.org/coalition

