



# OCEAN VISIONS

*Advancing Solutions for Ocean-Climate Restoration*

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October 31, 2024

Dear Chair Manning, Deputy Chair Busson, and Members of the Committee on Fisheries and Oceans:

Thank you for the opportunity to testify before you today. My name is David Koweek and I serve as the Chief Scientist of Ocean Visions, a non-profit dedicated to advancing solutions for ocean-climate restoration. It is an honor to appear before you today to share with you my support for Canada's ocean carbon sequestration study and my perspectives about the need for accelerated research and development of marine carbon dioxide removal, or ocean carbon sequestration.

Last week, the United Nations Environment Programme released its annual update to the [Emissions Gap Report](#) which showed record greenhouse gas emissions in 2023. Our collective inability to reduce emissions has put us on a path towards 2.5-3.0°C warming by the end of the century, far from the stated goals of the Paris Agreement to limit warming to 1.5°C. Such a path should be great [reason for concern](#) for us all as the Intergovernmental Panel on Climate Change has identified severe risks for nearly every major ecosystem on the planet. These risks are especially great for ocean ecosystems, which have absorbed greater than 90% of the additional heat that greenhouse gases have trapped and about one-quarter of the carbon dioxide emissions, resulting in increased ocean acidity of 30% since the pre-industrial. Already, many major Arctic ecosystems are at risk of experiencing a [tipping point](#) that would further contribute to warming of our planet, irreversible change, and societal disruption. Accordingly, we urgently need policies and guidance that encourage ocean-climate mitigation research across all sectors.

We must redouble our efforts to reduce emissions and we must also face the reality that our efforts at emissions reduction alone have not yielded the intended results. There is now [scientific consensus](#) that any pathways that limit warming 1.5°C or 2°C require large-scale removal of greenhouse gases, especially carbon dioxide, from the atmosphere and storage in durable oceanic, terrestrial and geologic reservoirs. Carbon dioxide removal is also our only tool to eventually restore the climate by removing legacy greenhouse gas pollution and returning

atmospheric greenhouse gas concentrations to levels consistent with climate stability and human flourishing on this planet. For these reasons, we must prioritize both reducing our emissions of greenhouse gases and the rapid advancement of carbon removal techniques.

Among the collective set of carbon dioxide removal options being considered, ocean-based pathways stand out for their scalable potential, yet they have not received research and development resource proportionate to their potential. Although there is an uptick in research and development of marine carbon dioxide removal pathways, much more remains to be done. My organization, Ocean Visions, has laid out an [ambitious framework](#) of integrated science, policy, and technology development to be accomplished by 2030 to yield actionable information on which, if any, of the marine carbon dioxide removal approaches are sufficiently effective solutions and also safe for scaling in the decades following. The linchpin of this ambitious agenda is an exponential ramp up in the field research on the various marine carbon dioxide removal approaches because field tests are the best way to gain high quality information about their efficacy, and their associated environmental and social co-benefits and risks.

Canada is emerging as a global leader in the nascent marine carbon dioxide removal sector. Off the coast of British Columbia, Ocean Networks Canada is advancing key scientific research on seafloor mineralization and biomass sinking. In Nova Scotia, Planetary Technologies and Dalhousie University collaborating on ocean alkalinity enhancement research and CarbonRun is pioneering river alkalinity enhancement. In Quebec, Deep Sky is working with US-based Captura to test Captura's direct ocean capture technology. Canada's collective investment in marine science and engineering has positioned it to be a leader in this emerging field. Should these technologies move to scale, Canadians stand to benefit from the jobs and climate benefits that this industry could support.

The proposed ocean carbon sequestration study is coming during an auspicious period in global development of a more robust climate mitigation portfolio. The study could play a valuable role in helping Canada identify additional areas of opportunity with respect to marine carbon dioxide removal technologies. Canada has early momentum in marine carbon dioxide removal demonstrations, which is a critical component for testing the environmental safety and efficacy of any innovation especially in a shared resource like the ocean. It is important that field tests continue unimpeded so they can inform the study.

Similarly, at the international level where Canada's leadership is well recognized, this report could be a valuable resource to encourage the effective bridging of international climate policy and marine protection governance. We see the need for regulatory clarity, policy, and guidance to allow for the full participation of the private sector, alongside academic institutions and non-governmental organizations, in safe and responsible marine carbon dioxide removal research.

We need constructive participation across all sectors to combat the worst impacts from climate change.

In closing, marine carbon dioxide removal approaches may offer one of our best ways to scale carbon dioxide removal and Canada is well poised to continue leading innovation in this sector.

Thank you again for this opportunity and I look forward to answering the committee's questions.

A handwritten signature in black ink, appearing to read 'D. Koweek', with a long horizontal flourish extending to the right.

David Koweek

Chief Scientist, Ocean Visions