

ARGUMENT

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China Is Disrupting the Ocean's Blue Carbon Sink

Washington and Beijing need to protect the global seabed—and address the staggering loophole in greenhouse gas reporting.

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As the United States and China prepare for the 26th U.N. Climate Change Conference of the Parties (COP 26) in Glasgow, Scotland, this November, U.S. special climate envoy John Kerry and his team should put “blue carbon”—carbon captured and stored by coastal and marine ecosystems—on the agenda for the first time. Blue carbon is a strategic global climate asset, but disruptions to it are currently not even systematically measured, much less reported, by leading disruptor China or any other nation. Kerry can publicly highlight the issue and begin making the case for factoring seabed and marine ecosystem disruption into the global climate policy equation.

The ocean covers 71 percent of the world's surface, but less than 10 percent of the seafloor has been mapped using modern sonar, according to the National Oceanic and Atmospheric Administration. Wide-ranging salt marshes, mangroves, seagrass beds, and the ultra-deep abyssal seabed may be out of sight and mind for most people, but they are very much alive and keeping us all well—particularly by absorbing large quantities of carbon dioxide from the atmosphere and balancing critical ecological and climate systems. Disrupting such millennia-old processes before we even partially understand them risks grave and

potentially irreversible harms.

A landmark study recently published in the scientific journal *Nature* underscores that “marine sediments are the largest pool of organic carbon on the planet,” with an estimated volume on the order of seven trillion metric tons—more than three times the cumulative anthropogenic carbon dioxide emissions since 1750. These carbon sequestration zones are subject to both a major existing threat (bottom trawl fishing) and an emerging one (seabed mining for polymetallic nodules). China plays a massive role in both activities.

Bottom trawling entails dragging a weighted net along the seafloor to catch fish, effectively plowing the seabed and damaging or destroying coral reefs and other marine flora and fauna that either cannot move or otherwise escape the dragnet. Like other ecologically destructive fishing techniques, it has become more common as consumers demand larger amounts of fish at a lower price. Trawling disturbs seafloor sediments and triggers metabolization of stored organic carbon into carbon dioxide, which can then acidify seawater or escape into the atmosphere. The *Nature* study estimates that bottom trawling disturbs 4.9 million square kilometers of seafloor each year, an area equivalent to Alaska, Texas, California, Montana, New Mexico, Arizona, Colorado, Oregon, and Wyoming combined, with the release of nearly 1.5 billion metric tons of carbon dioxide.

Moreover, seafloor-disturbance carbon emissions are not a one-off event. They can continue at a material level for centuries, so long as trawling activity continues. As the *Nature* study explains, if an area is trawled each year, after nine years its emissions stabilize at about 40% of the first post-disturbance year’s level and can continue from there for up to approximately 391 more years, until all the carbon originally stored in the sediment has been metabolized.

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The People's Republic of China (PRC) is the world's largest bottom trawler. Research based on forensic reconstruction of catch and fishing fleet data for a 70-year period suggests that PRC-domiciled or controlled vessels presently account for 28 percent of the entire global bottom trawl fishing catch. PRC-affiliated vessels fish not just in China's own littoral, but also farther afield.

Indeed, a report published by the Overseas Development Institute in June 2020 estimated that China's distant-water fishing fleet—the world's largest by far—includes at least 1,800 trawlers and that the real number could “be considerably higher” given difficulties in tracking vessels' ultimate ownership. These vessels operate both in China's exclusive economic zone (EEZ) and in foreign waters, with ship automatic identification system data showing pockets of activity throughout the northwest Pacific Ocean, in the Southern Ocean near Argentina and Antarctica, in the Atlantic off West Africa, and across a broad swath of Oceania in the Central and South Pacific Oceans.

China is the world's leading emitter of trawling-associated carbon dioxide, with about 770 million metric tons (half of estimated global trawling-related emissions) released per year from trawling within its own EEZ alone—to say nothing of its massive global fishing operations. This amount is equivalent to about 8 percent of China's carbon dioxide emissions from fossil fuel combustion. Because China's fishing fleet heads so far outside of its own waters, the total emissions attributable to trawling by PRC-affiliated vessels is likely even higher.

But bottom trawl weights are not the only PRC-controlled implements agitating the carbon-critical seabed. Chinese firms are now among the world's largest holders of subsea mining leases, with many of these focused on the Clarion-Clipperton Fracture Zone (CCFZ), a sprawling oceanic expanse south of Hawaii rich in polymetallic nodules containing cobalt, manganese, nickel, rare earths, and other metals critical to production of batteries and motors for electric vehicles, wind turbines, and other green energy infrastructure.

Seabed mining appeals because of the richness of the resources available, with estimates suggesting that “collectively, the nodules on the bottom of the ocean contain six times as much cobalt, three times as much nickel, and four times as much of the rare-earth metal yttrium as there is on land.” It also offers a way to diversify away from the tumultuous Democratic Republic of the Congo, the world’s largest supplier of cobalt and, increasingly, a substantial supply chain, environmental, social, and governance liability for corporations that source raw materials from the country.

Industrial-scale seabed mining could conceivably replace much of the cobalt supply currently obtained from the Democratic Republic of the Congo. But it would likely do so in a way that would swap one set of visible tragedies—child labor, environmental degradation, and predatory governance—for a less immediately tangible but ultimately far worse set of environmental impacts that could manifest at a global level.

As just one example, seabed mining leases currently granted in the CCFZ occupy a span of approximately 2,850 miles east-to-west. That’s roughly the distance between Los Angeles and Nova Scotia. Despite having waters that are often more than two miles deep, the CCFZ is an ecologically rich zone of substantial carbon sequestration and ecosystem importance, one that is only beginning to be understood. Disturbing thousands of square miles of seafloor could also create additional unintended climate consequences—including, for instance, disruption of hydrates that release large quantities of methane, a greenhouse gas proportionally far more powerful than carbon dioxide.

Yet despite its potentially far-reaching consequences, undersea mining remains largely unregulated. The Jamaica-headquartered International Seabed Authority, which issues seabed mining leases in international waters that lie beyond any specific nation’s jurisdiction, has granted vast prospecting sites across the CCFZ to entities associated with China and 14 other countries—with PRC-affiliated entities being the only ones granted two sites. There are few externally enforceable restrictions on how these entities will be able to

operate in their lease zones. Further complicating matters, the United States is not an International Seabed Authority member state. This gives Beijing largely unchecked influence over the uniquely influential organization.

Disruptions to carbon-relevant seabed and marine ecosystem are currently neither systematically measured nor reported by China (or any other nation), despite the leading role PRC-affiliated fishers and miners play in those disruptions. Although climate change reports by themselves do not alter emissions trajectories, data collection and reporting can provide a basis for discussion and negotiation—as well as foreshadow how rigorously a state is willing to hold itself and entities operating within its borders and/or under its jurisdiction accountable for meeting emissions targets. Conversely, data blind spots amplify decision-related risks for policymakers.

Under existing international arrangements, some categories of maritime climate-influencing activities are relatively well covered. In a prime example, oceanic shipping, together with its consumption of bunker fuel and related emissions, is closely monitored by the International Maritime Organization and industry analysts alike. The U.N. Intergovernmental Panel on Climate Change (IPCC) 2013 guidelines update finally added coastal wetlands as a category for recommended reporting and offers: “Guidance on specified management activities in coastal areas of mangroves, tidal marshes, and seagrass meadows.” Notably, however, the word “seabed” does not appear anywhere in the detailed 354-page report.

The IPCC’s most recent guidelines update, the voluminous “2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories,” similarly lacks even a single mention of the word “seabed.” To date, in fact, the IPCC has not addressed ocean sediments at all, let alone offered guidelines concerning responsibility for greenhouse gas impacts therein, or how to measure those impacts. This is a staggering loophole at a time of sweeping land-based climate proposals that can re-shape lives, communities, economies,

and geopolitics radically, rapidly, and potentially irreversibly.

Internationally accepted data and reporting requirements for greenhouse gas

inventories are based on the IPCC-issued guidelines. The specifics of compliance are entirely voluntary in nature—a flexibility that Beijing uses to pursue its own priorities.

There are three tiers of reporting for each of approximately 80 greenhouse gas compounds. The United States typically provides facility-level reporting—equivalent to the IPCC's Tier 3 (highest-quality) standard. In contrast, China's most recent inventory, “The People's Republic of China Second Biennial Update Report on Climate Change,” is laden with the generalities typical of PRC white papers and thin on specific data and methodologies by which the data were obtained and assessments made. It is far less substantive, rigorous, and current than its highly transparent, frequently updated U.S. counterpart.

The present disjuncture of interests and urgency will play a pivotal role as Beijing searches for leverage points in an international environment that looks likely to yield various counter-PRC diplomatic and economic alignments, and in which the individuals deciding policy for many of China's competitors increasingly make climate concerns a central principle guiding their strategic courses of action.

These issues must be tackled in the run-up to Glasgow—and in the decisions formed there. The United States also needs to devote more attention and effort to marine ecosystem and climate issues, but at least it is already taking some proactive steps to acknowledge, probe, and protect blue carbon sinks, and to help others do the same. For example, the National Oceanic and Atmospheric Administration provides ongoing data support for the U.S. greenhouse gas inventory and international capacity building to help partner nations

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estimate their blue carbon storage levels. China's emissions within IPCC monitoring loopholes must be fully acknowledged and accounted for by U.S. officials and foreign climate partners as they formulate climate diplomacy approaches. Beijing must also acknowledge its leading blue carbon stewardship responsibility and take action accordingly.

If there is one substantive breakthrough that could come out of the next two months before the COP 26 summit, it might be major stakeholders beginning to discuss blue carbon's climate criticality for the first time on a prominent international stage. Given China's central role in disrupting oceanic carbon storage in particular, a verifiable reduction in bottom trawling and other destructive practices by PRC-affiliated firms and entities would be a positive indicator of broader Chinese commitment to real climate progress. Rather than problematic negotiations that risk playing into the party line, finally putting blue carbon on the table with China in Glasgow this November could become a defining part of Kerry's historic climate legacy.

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