DEEP DECEPTION

HOW THE DEEP SEA MINING INDUSTRY IS MANIPULATING GEOPOLITICS TO PROFIT FROM OCEAN DESTRUCTION

STOP DEEP SEA MINING

GREENPEACE

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Greenpeace is an independent campaigning organization that uses peaceful protest and creative communication to expose global environmental problems and to promote solutions that are essential to a green and peaceful future.

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INTRODUCTORY LETTER

As a military officer who spent decades assessing true threats to national security, I can say this with clarity: deep sea mining is not a strategic necessity—it's a manufactured crisis built on corporate greed and deception. What we are witnessing is not a fact-based response to a military need, but an attempt by private actors to drape a speculative commercial venture in the flag of national defense.

First, it was framed as essential for the energy transition. Now, facing market rejection, deep sea mining proponents are rebranding their pitch—claiming seabed metals are vital for military readiness. But the Department of Defense isn't asking for these minerals. Viable alternatives exist through allied supply chains, recycling, and stockpiles. The deeper truth is this: "national security" is being invoked not to protect the country, but to secure investor returns.

We must be clear-eyed about what is truly at risk. Deep sea mining threatens the largest living space on the planet—one that regulates climate, supports biodiversity, and sustains the oceanic systems on which all life depends. Destroying it in the name of hypothetical threats would be not only irresponsible—it would be strategic malpractice.

The bedrock of national security is not simply weapons or minerals—it is global stability, rule of law, and ecological resilience. Mining the deep ocean in defiance of international consensus would degrade all three. It would erode U.S. credibility, fracture alliances, and set a dangerous precedent for unilateral resource exploitation.

A moratorium is not a political stance. It is a strategic imperative. Before a single commercial operation begins, the world must reckon with the true costs of deep sea mining—ecological, legal, and geopolitical. The only responsible path forward is restraint.

Let us not be deceived by opportunistic and materialistic appeals that are shrouded in false patriotism. The business of national security demands rigor and truth, not rhetoric and greed.

Sincerely,

Major General (Ret.) Randy Manner
U.S. Army

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EXECUTIVE SUMMARY

On 27 March 2025, The Metals Company (TMC) set off a geopolitical alarm. Facing financial pressure and stalled progress at the International Seabed Authority (ISA), the deep sea mining company announced it would seek U.S.-issued permits under the outdated 1980 Deep Seabed Hard Mineral Resources Act to mine the deep sea Area under an American authorization—brazenly bypassing international consensus. Just weeks later, the Trump administration issued an Executive Order signaling its readiness to unilaterally authorize deep sea mining in both U.S. and international waters, the latter in contradiction to the United Nations Convention on the Law of the Sea (UNCLOS), an international treaty to which—unlike the vast majority of nations—the U.S. is not party. Days after the Executive Order, TMC applied to the U.S. for both licenses for exploration and permits for commercial mining.

This one-two-three punch—a corporate provocation followed by executive endorsement followed by formal application—marks a dangerous pivot from multilateral governance. This report explains why the deep sea mining's industry narrative has no credibility and why deep sea mining should not be allowed to begin at all.

Far from responding to urgent strategic need for the minerals found on the deep seabed, the latest push for deep sea mining is a lifeline for an industry in crisis—one that is increasingly invoking national security as a justification to secure funding, influence policymakers, override environmental safeguards, and now circumvent international law. While the April 2025 Executive Order seeks to create domestic supply chains for economic growth, reindustrialization, and military preparedness, viable alternatives still exist to meet strategic needs without opening a hazardous new extractive frontier. To date, for example, there has been no public indication that the U.S. Department of Defense is calling for deep sea mining, and military demand for these metals has remained minimal—meaning that the argument for mining in the name of national security is not being driven by the DoD itself.

Crucially, this latest act of U.S. exceptionalism could have far-reaching implications—not only for mining governance, but for fisheries, naval operations, shipping lanes, marine scientific research, environmental protection, and maritime boundaries. UNCLOS establishes a package of rights that all states enjoy, whether they have ratified the treaty (like most of the world) or not (like the U.S.). Breaking from it would weaken U.S. credibility and undermine the very legal frameworks the U.S. depends on to enforce both high seas freedoms and its own exclusive economic zone and extended continental shelf claims.

By going it alone in contravention of UNCLOS, the U.S. would not only invite legal challenges but also erode its authority to demand compliance from other states—on issues like illegal fishing, military navigation, and extended continental shelf rights. This is especially risky in contested regions such as the Arctic, where U.S. claims border those of Russia and Canada.

Deep sea mining is an industry that never needs to exist. Despite narratives pushed by the would-be industry and its advocates, the world does not need it for the development of a sustainable circular economy, to transition off fossil fuels, or to address national security or defense concerns. The propagandists of deep

sea mining would have the public believe that without pillaging the seafloor we risk climate disaster, geopolitical vulnerability, and potential mineral shortages that could jeopardize national security. Nothing could be further from the truth.

In addition, there is a very real risk that deep sea mined minerals could infiltrate global supply chains and be used for military purposes, undermining the fundamental principles enshrined in UNCLOS that the international seabed is the common heritage of humankind and must only ever be used for peaceful purposes and for the benefit of all humankind. Once the deep sea mining genie is out of the bottle it will be very difficult to prevent minerals taken from the international seabed entering the military-industrial complex.

The claim that a Mining Code will solve these problems is an illusion—even more so in light of the threatened U.S. unilateral action. Such a code has been on the negotiation table at the ISA for years, but no set of rules can adequately govern an industry whose very premise is rooted in environmental destruction, downplaying scientific warnings, exploiting geopolitical volatility, and opportunistic lobbying by a handful of corporations. With or without a code, pursuing deep sea mining will increase security risks—environmentally and geopolitically.

What is needed now is not regulation, but restraint: a global moratorium to protect the global commons and stop deep sea mining before it starts.

KEY FINDINGS

1. A Greenpeace USA investigation reveals growing evidence linking the deep sea mining industry with military contractors, pro-defense representatives, and venture capitalists. From Norway to the United States, corporations hoping to launch a new deep sea mining industry are opportunistically trying to link underwater mineral resources to national security in order to attract new investment and political support.

2. As Sandor Mulsow, former Former Head, Office of Environmental Management and Mineral Resources at International Seabed Authority points out, this risks an "exploration war in order to secure such resources in the future." This view is shared by Randy Manner, retired Major General in the U.S. Army, who sees "money and business" as the only real motivation for deep sea mining.

3. "National security" is overtaking "energy transition" as the narrative du jour for deep sea tycoons. In their search for political support and funding, deep sea mining hopefuls are getting closer to influential military circles, particularly in the United States.

4. The Metals Company (TMC), the Vancouver-based deep sea mining start up, has largely pivoted from their energy transition narrative to hyping up the risks of the U.S. depending on Chinese-dominated supplies of critical metals and playing up national security concerns. Having lobbied for years to accelerate the adoption of a Mining Code by the ISA, TMC's CEO Gerard Barron has now garnered the support of Republican defense hawks and military veterans in the U.S., and recently boasted about visiting the White House.

5 Traditional defense contractors are retreating from deep sea activities, but keeping their options open. Lockheed Martin has kept U.S.-issued exploration licenses in the Pacific's Clarion-Clipperton Zone (CCZ) for more than forty years, outside of any international legal framework, but never taken active steps to start exploitation. In the meantime, Norwegian state-owned defense operator Kongsberg had taken stakes in Loke Marine Minerals (which held UK-sponsored exploration licenses in the CCZ) and was also an investor in TMC, before it recently declared bankruptcy in yet another deep sea mining cautionary tale.

6 Our investigation finds that deep sea mining is a supply-driven venture, not a response to genuine market demand. Despite decades of promotion, the industry has failed to prove its relevance to any critical supply chain—civilian or military. Claims that polymetallic nodules are essential to defense applications appear to be a marketing narrative, not a procurement reality. Defense contractors are unlikely to rely on an unproven, high-cost extraction model when more stable, terrestrial sources or recycling pathways exist. In the absence of compelling technical or material need, the industry's prospects hinge almost entirely on political endorsement—not market viability.

7 The continuous change in narrative unfolded by the deep sea mining industry—the latest of which is to appeal to national security concerns—demonstrates that the industry is driven by greed, not need. Their quest for investments and political support in the defense sector could usher in the militarization of the deep sea. Once deep sea mined minerals enter global supply chains it will be impossible to stop them being used for military purposes, contradicting UNCLOS Article 141, which states that the resources of the international seabed shall be used "exclusively for peaceful purposes".

8 Additionally, deep sea mining risks becoming a flashpoint in the broader buildup of geopolitical conflict over the ocean, particularly in the Pacific. This threatens to transform the international seabed from a zone of peace and cooperation into a contested theater of resource extraction and geopolitical brinkmanship.

9 Despite the realities outlined above, the deep sea mining industry appears to have found shared interest with U.S. President Donald Trump. A new Executive Order, "Unleashing America's Offshore Critical Minerals and Resources," signed on 24 April 2025, launches a process for U.S. agencies to begin licensing deep sea mining in both domestic and international waters. In bypassing UNCLOS, this act of U.S. exceptionalism undermines the multilateral governance of the high seas, could exacerbate geopolitical risks, and would have serious implications for both the U.S. and international order on issues like illegal fishing, military navigation, and extended continental shelf rights. In addition, any company seeking to exploit the international seabed through licenses issued by the U.S. outside of UNCLOS risks serious litigation challenges on multiple fronts.

10 To maintain peace, harmony and stability in the governance of our shared global commons, and ensure that decisions on the future of the international seabed are made collectively by all nations and not dictated by private profit-driven companies, the only viable political solution is for all countries to agree to adopt a global moratorium on deep sea mining both nationally and internationally.

The Greenpeace ship Arctic Sunrise arrives in Kingston, Jamaica during ISA negotiations, March 2023, calling for a global moratorium on deep sea mining.

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A DESPERATE INDUSTRY SEEKING TO JUSTIFY ITS EXISTENCE

The deep sea mining industry, once touted as a game-changing solution for the clean energy transition, is now grappling with mounting setbacks, fractured legitimacy, and fading momentum. Over a century after polymetallic nodules were first discovered during the HMS *Challenger* expedition in 1873, the arc of deep sea mining—from Cold War-era intrigue to speculative commercial ventures—has reached a critical inflection point.

Companies like The Metals Company (TMC), which once marketed itself as a climate champion, have increasingly adopted a national security rhetoric—reframing seabed minerals as critical to securing supply chains for defense technologies and strategic autonomy. In its most brazen move to date, TMC announced plans to bypass the International Seabed Authority (ISA) entirely by seeking a U.S. exploitation license under the long-dormant Deep Seabed Hard Mineral Resources Act (DSHMRA), directly courting favor with the Trump administration and undermining multilateral governance.

This pivot comes amid rapidly advancing battery recycling technologies, weakening market interest, growing environmental opposition, and widespread calls for caution. With over 30 ISA member states supporting a moratorium or precautionary pause, leading insurers refusing to underwrite deep sea mining activities, and TMC recently surrendering a third of its Clarion-Clipperton Zone claim area, the sector's viability is under deep scrutiny. Confidence has further eroded with the March 2025 bankruptcy of Norway's Loke Marine Minerals—until recently seen as deep sea miming's most viable private player.

As TMC pivots from the ISA to pursue licensing through the U.S. government, the industry is increasingly seen not as a frontier of sustainability or security—but as one grasping for relevance. Having failed to justify its existence through environmental benefit or commercial promise, deep sea mining now leans heavily on geopolitical fear to open a door the world is not ready—or willing—to walk through.

TIMELINE

On the bottom of the pages ahead a timeline unfolds to connect the dawn of interest in deep sea mining to changing industry narratives and geopolitical positioning across the decades, culminating in the U.S. opening a process for both domestic and international deep sea mining in April 2025. The timeline can be viewed as one piece online (with citations) at: **https://www.greenpeace.org/usa/deep-deception**

1873

Polymetallic nodules are discovered in the Atlantic Ocean during the HMS Challenger expedition, marking the first major deep-sea exploration.

November 1967

Arvid Pardo, a Maltese diplomat, delivers landmark speech at the United Nations General Assembly advocating that the seabed and its resources beyond national jurisdiction should not be subject to national appropriation. His vision of the "Common Heritage of Mankind" later guides the formation of the International Seabed Authority (ISA).

INTRODUCTION: DEEP SEA MINING AT A DANGEROUS THRESHOLD

Deep sea mining is an industry that needs to be stopped before it starts. It is unproven, reckless and unnecessary. Over the past 50 years, various countries and corporations have taken steps towards getting deep sea mining off the ground, only to end in abandoned plans and in some cases huge financial loss. Meanwhile, both scientific warnings about the potential for irreversible damage to fragile marine ecosystems and widespread opposition to deep sea mining are growing louder. But today the future of the deep sea—Earth's largest habitat and most important carbon sink—is at a dangerous inflection point.

The United Nations Convention on the Law of the Sea (UNCLOS) was built on a foundational promise: that the ocean floor beyond national jurisdictions would be managed in the interests of all humankind and reserved for peaceful purposes. That vision is now under direct threat.

On 27 March 2025, Canada-based prospective deep sea mining company, The Metals Company (TMC), announced a drastic new pivot, declaring its intent to bypass UNCLOS and operate outside the International Seabed Authority (ISA) framework.* TMC's subsidiary in the United States had initiated a process with the National Oceanic and Atmospheric Administration (NOAA) to apply for exploration licenses and commercial recovery permits in the international seabed unilaterally through the U.S., under the 1980 Deep Seabed Hard Mineral Resources Act (DSHMRA).[1]

This announcement was swiftly met with almost universal condemnation by member states gathered the next day at a special debate on the last day of the ISA Council. Over 30 countries, many of them close allies of the U.S., voiced their opposition to TMC's plan, while the Secretary-General of ISA, Leticia Carvalho, reaffirmed that the ISA was the only legitimate framework for exploration and exploitation in the international seabed and that "*unilateral action would constitute a violation of international law and directly undermine the fundamental principles of multilateralism, the peaceful use of the oceans and the collective governance framework established under UNCLOS.*"[2]

However, there is one place where TMC's new strategy is finding a very receptive audience: the Trump administration.

* The International Seabed Authority (ISA) is an autonomous international organization established under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (1994 Agreement). ISA is the organization through which States Parties to UNCLOS organize and control all mineral-resources-related activities in the Area for the benefit of humankind as a whole. ISA is based in Kingston, Jamaica.

August 1970
Deepsea Ventures Inc conducts the world's first successful deep sea mining system test in Blake Pateau, off the coast of South Carolina.

1975
Howard Hughes commissions the Glomar Explorer, a massive ship built under the pretense of a deep sea mining expedition in the Pacific. It is later revealed as a covert CIA operation to recover a sunken Russian nuclear submarine.

America first? Race to the bottom or a galvanizing moment for the ocean

The re-election of President Trump has reignited U.S. ambitions for unilateral deep sea mining and reshaped the global stakes surrounding the industry. This was confirmed just a few weeks after the TMC bombshell when, on 24 April 2025, the President signed an Executive Order entitled "Unleashing America's offshore critical minerals and resources",[3] invoking the DSHMRA and announcing the administration's intent to unilaterally advance U.S. deep sea mining interests outside the bounds of the international legal system and in open defiance of the ISA's authority. The Executive Order repeatedly invokes national security and defense—casting deep sea mining as vital to U.S. strategic dominance—while environmental considerations are mentioned only in the narrow context of supporting data collection and resource assessments to enable mining activity; climate change is not referenced at all. It marks an aggressive departure from multilateralism and suggests a deepening of nationalist, unilateral approaches to ocean governance.

The race for the deep sea is now entangled in a geopolitical chess game. Once the domain of scientific research and multilateral negotiations, the deep sea is fast becoming a new frontier for power projection—an arena where ex-military officials, defense contractors, and national security hawks are being drawn in by the lure of strategic advantage and profit. Rather than seeking a seat at the ISA's negotiating table, the Trump administration appears determined to challenge the legitimacy of the UN-derived Authority itself—potentially opening the door to U.S.-licensed private entities operating outside the ISA framework entirely: entities like TMC USA.

This is no coincidence. TMC has been at the forefront of a recent radical shift in how deep sea mining is being framed and pursued. Under the leadership of CEO Gerard Barron, and in the face of growing environmental and political opposition, TMC has actively repositioned its arguments in support of deep sea mining away from a focus on minerals for the green energy transition and into a matter of U.S. national security.[4] The company has courted government and military officials,[5,6] invoked competition with China,[7] and portrayed critical minerals as essential to defense readiness—effectively recasting the seabed as a strategic asset in great-power rivalry.

Days before the Executive Order was signed, Barron posted a photo of himself leaving the White House, praising Trump's new Tesla and alluding to his confidence in the administration's direction. Just one week later, he was on Capitol Hill testifying before the U.S. House Natural Resources Subcommittee on Oversight and Investigations at a hearing entitled "Exploring the Potential of Deep Sea Mining to Expand American Mineral Production", and once again hammering the theme that the U.S. should open deep sea mining to counter Chinese influence. On 29 April 2025, TMC submitted applications to NOAA for two exploration licenses and one recovery permit in international waters.[8]

Emboldened by the Trump administration's stance, TMC is actively working to undermine the authority of the ISA and bypass multilateral governance altogether. And Barron's close alignment with the White House—both stylistically and strategically—signals a company positioning itself not just as a mining entity, but as a proxy in a broader geopolitical campaign.

1982
The United Nations Convention on the Law of the Sea (UNCLOS), a legal framework for governing seafloor activities, is adopted.

November 1994
UNCLOS enters into force, formally establishing the ISA to regulate seabed exploitation in international waters and ensure environmental protection "for the benefit of humankind as a whole." The United States does not ratify the treaty, and holds only observer status at the ISA.

"For 25 years, deep sea mining was a distant reality. Negotiations were easygoing, and those gathered in Jamaica would mingle at weekend retreats and dance parties."
- Hakai Magazine, 2024

The Trump administration's open embrace of deep sea mining as a tool for U.S. economic and strategic dominance reflects a disturbing disconnect with UNCLOS' foundational principles—that the ocean floor should be reserved for peaceful purposes and deep sea mining should only be authorized if it can benefit all of humanity. This is no longer a question of equitable benefit-sharing or environmental due diligence. The deeper danger is that deep sea mining becomes a flashpoint in the broader build up of geopolitical conflict over the ocean—transforming the international seabed from a zone of peace and cooperation into a contested theater of resource extraction and geopolitical brinkmanship.

This report aims to show that deep sea mining is being rushed forward, not because of any genuine global need for the minerals that could potentially be sourced, nor any strategic question of national security, but because of corporate greed and political opportunism.

TMC's shifting narrative—from green solution to geopolitical imperative—is a red flag indicating their desperate need to make a profit, not a justification for mining the common heritage of humanity.

The best way to combat this deep deception is for all countries to agree to a global moratorium on the practice of deep sea mining.

Rather than advancing the race for seabed minerals, TMC and the Trump administration's aggressive pivot risks provoking a global backlash—galvanizing calls for a moratorium not only on environmental grounds, but as a geopolitical safeguard. In the face of rising great-power tensions, the international community must recognize deep sea mining for what it is: not a pathway to shared prosperity, but a catalyst for conflict—one that must be halted before it crosses a dangerous threshold.

What is deep sea mining?

Deep sea mining is the process of extracting ore from the seafloor in waters generally deeper than 200 meters, both in Areas Beyond National Jurisdiction and within national or extended jurisdiction. It predominantly describes the extraction of three very different ore types: cobalt-rich crusts that form on the sides of seamounts; seafloor massive sulphides that are created by the geochemical activity of hydrothermal vents; and polymetallic nodules, small accretions that form across the vast abyssal plain.

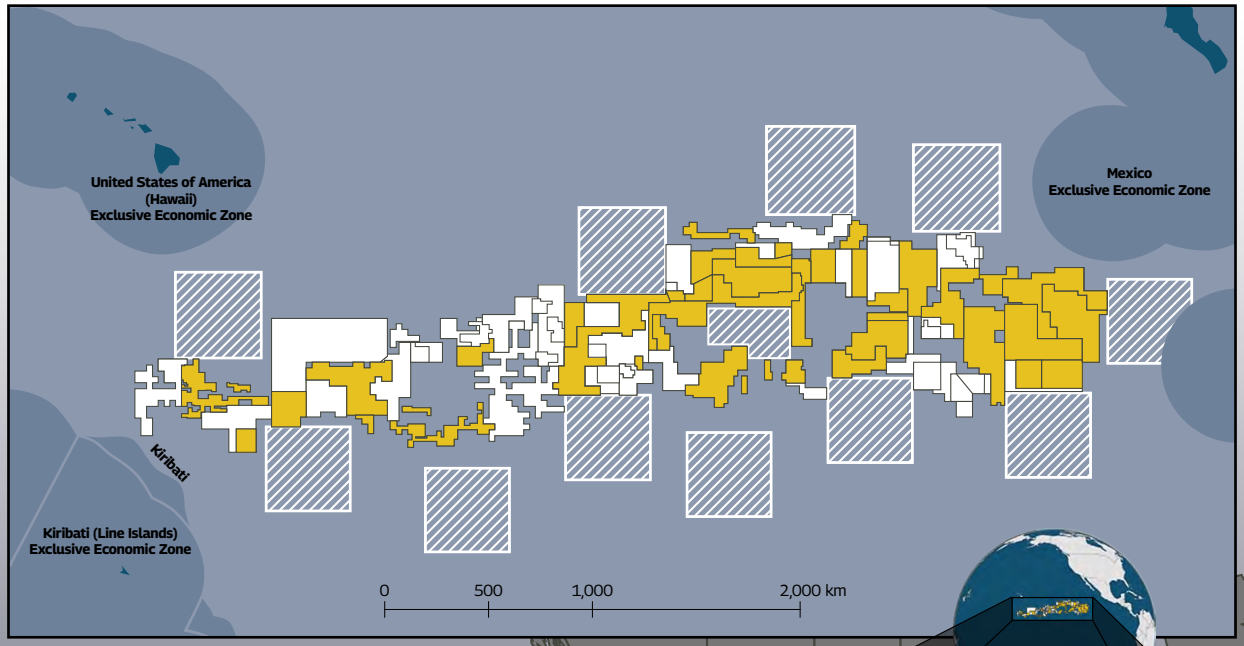
Polymetallic nodules are the primary target of today's prospective deep sea miners. Unlike other deep sea deposits, nodules typically sit on top of the sediment, scattered in the form of small rocks across the abyssal plain and accumulating in vast fields in regions like the Clarion-Clipperton Zone (CCZ) in the north-east Pacific between Hawai`i and Mexico. Nodules are forged over millions of years as metals from the surrounding seawater accrete around a hard nucleating agent like a shark's tooth or shell fragment.[9] Mature nodule fields can be tens to hundreds of millions of years old and the nodules themselves are rich in manganese, cobalt, nickel, and copper, as well as traces of molybdenum and metallic rare earth elements.[10]

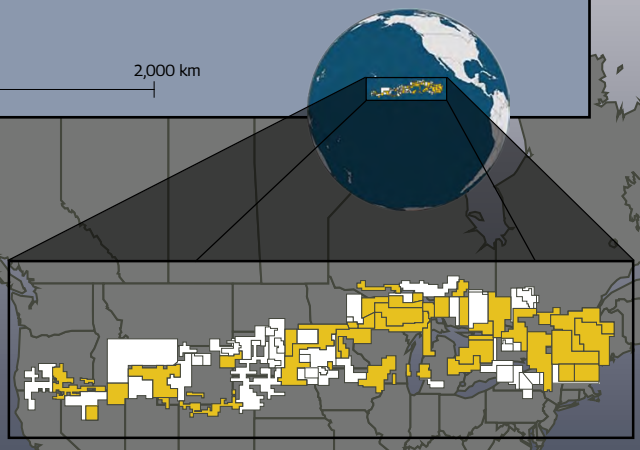
1997
Nautilus Minerals is founded by Australian geologist David Heyden as one of the first companies dedicated to commercial deep sea mining.

1997
Papua New Guinea (PNG) grants Nautilus the world's first commercial offshore exploration licenses for deep sea mining.

Early 2000s
Nautilus secures exploration licenses across PNG, Fiji, Tonga, Solomon Islands and Vanuatu. By 2007 the company holds claims covering more than 106,500 square miles - an area larger than the United Kingdom.

CLARION-CLIPPERTON ZONE EXPLORATION AREAS





Reserved Areas

ISA exploration areas granted to 21 contractors

Areas of Particular Environmental Interest (APEI)

The Clarion-Clipperton Zone (CCZ), a vast stretch of the Pacific Ocean seabed, is ground zero for deep sea mining. To date, the International Seabed Authority (ISA) has signed 15-year exploration contracts with 21 companies and state-backed entities to assess polymetallic nodules, sulphides, and cobalt-rich crusts in this region of international waters—raising growing alarm among scientists, Indigenous leaders, and environmental advocates.

Data: Durden, J.M. et al. (2021, 30 June). Megafaunal Ecology of the Western Clarion Clipperton Zone. *Front. Mar. Sci., Sec. Deep-Sea Environments and Ecology* (8) 2021: **https://doi.org/10.3389/fmars.2021.671062**

International Seabed Authority - **https://www.isa.org.jm/maps/clarion-clipperton-fracture-zone/0010-regional-maps-clarion-clipperton-fracture-zone-3/**.

Clarion-Clipperton Zone (CCZ): The Geopolitical Front Line of Deep Sea Mining

Stretching across the central Pacific, the CCZ is the world's largest region under active exploration for deep sea mining. Corporations like The Metals Company hold ISA-sponsored exploration contracts in the region through partnerships with small Pacific Island states. Amid growing calls for a moratorium, the CCZ has become a geopolitical flashpoint, as major powers seek access to seabed minerals—framed as essential for strategic autonomy and economic development.

2001
Gerard Barron, a close associate of Heydon, invests $226,000 in Nautilus.

2006
Nautilus goes public on the Toronto Stock Exchange (TSX).

2007
Barron exits Nautilus at the height of its share price, netting $31 mil on his $226k investment over 6 years.

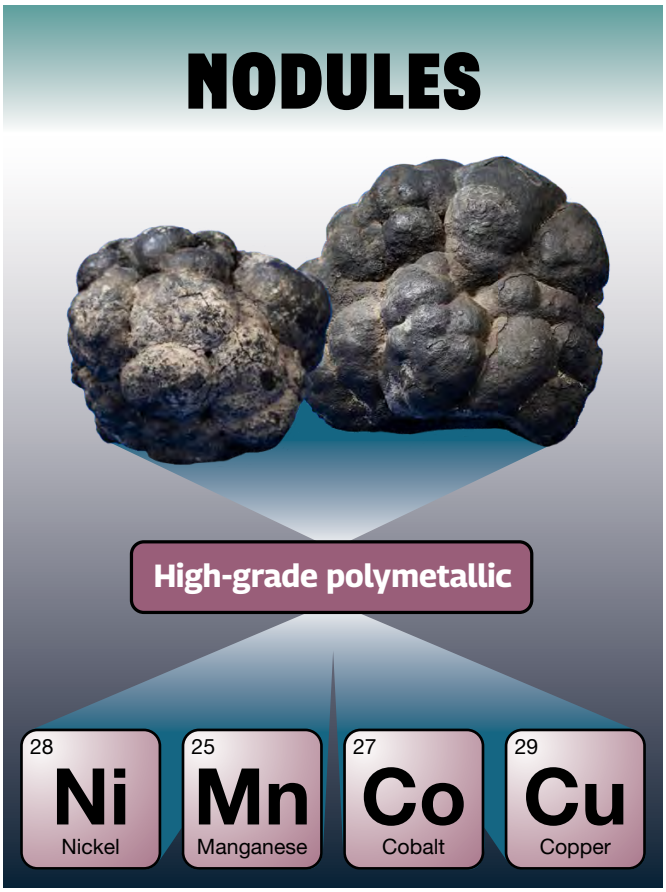
What lies beneath? The cost of knowing too late

The deep ocean is not a barren expanse—it is a vast, living system that regulates planetary health, stores carbon, cycles nutrients, and holds secrets we are only beginning to uncover. Recent discoveries around polymetallic nodules themselves include the facts that they are not only naturally radioactive (which may have serious implications for storage and industrial processing) but also enable "dark oxygen production": the production of oxygen through reactions at the surface of the nodules in the complete absence of sunlight. If deep sea mining goes forward, it may impact on the very processes that help make our planet habitable—before we even understand the roles the nodules play as part of the ecosystem.

The world is being asked to gamble with what scientists describe as "irreversible impacts"[11]—the permanent removal of polymetallic nodules that took millions of years to form, and the destruction of habitats that may never recover. The full consequences of disrupting these fragile ecosystems—of which nodules provide a core structural component of the habitat—are unknown, and perhaps unknowable—until it is far too late.

Article 145 of UNCLOS states that *"necessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities."* The endangerment of the dark oxygen production process is just the latest in a multitude of adverse effects scientists have linked to human activities in deep waters should commercial-scale deep sea mining launch in the world ocean.[12] These include the destruction of benthic habitats, disruption of sediment balance, underwater noise pollution, and disruption of geochemical processes. All these impacts are destructive to underwater life forms, many as yet unknown to humanity.

Deep sea mining would cause inevitable and irreparable damage to the ocean biome, drive further global biodiversity loss, and degrade carbon stores in deep water sediments through their disturbance and disruption of the processes that maintain those stores. To date, deep sea mining remains a speculative industry, with no more than a few pilot trials undertaken over the last couple decades to collect nodules on the seabed. No industrial-scale deep sea mineral collection or complete processing campaign has ever been deployed anywhere in the world—it is vital that it stays that way.



2008
Heyden steps down as Persident and CEO of Nautilus. The financial terms of his departure remain undisclosed.

January 2011
PNG grants Nautilus a 20-year mining lease for the Solwara 1 project and acquires a 30% equity stake.

2011
Heydon launches DeepGreen Metals ULC (DeepGreen), later joined by Barron, who becomes its most visible executive.

© Greenpeace

July 2011
Nauru Ocean Resources Inc. (NORI), a wholly owned DeepGreen subsidiary, is awarded a 15-year ISA exploration contract sponsored by the Republic of Nauru, covering 74,830 km² in the Clarion-Clipperton Zone (CCZ).

March 2012
DeepGreen Engineering Pte Ltd. (DGE), a subsidiary of DeepGreen, secures an option agreement with Marawa and the Republic of Kiribati for ISA-reserved exploration areas.

SECTION 1 MANUFACTURING URGENCY FOR GREED, NOT NEED

1.1. Early deep sea mining supporters appealed to fears of foreign control over minerals

Fifty years ago, no one could have foreseen that deep sea mining would one day be opportunistically re-framed as a means to quench the mineral thirst of the energy transition. Even the concept of an "energy transition" barely existed before Harrison Brown, a chemist from the California Institute of Technology, first coined the term during a conference in 1967.[13] A few years later, the 1973 and 1979 oil crises would prompt leaders to start seriously contemplating alternative sources of energy to reduce their reliance on oil producing nations.

The strategy used in the 1970s by John E. Flipse, president of Deepsea Ventures, was to present deep sea mining as instrumental for the United States to prevent a "cartelization" of terrestrial mining in the hands of a few developing countries.[14] The risk, Flipse claimed, was that the "New Economic Order"[15] being pursued by newly independent countries would result in this "*cartelization as a resurgence of unsavory national, instead of business, monopolies*", thus putting the U.S. supply of critical minerals at risk.

Even as recently as the early 2010s, when Lockheed Martin secured new deep sea exploration licenses with the UK government, "*no one really understood that critical metals were going to be needed for green technologies, which were really small at the time*", recalled Chris Williams, who managed the licenses for Lockheed Martin, in an interview with a freelance journalist.* He explained that, "*I think it's fair to say that one of the key drivers for the UK interest in this at the time was geopolitical*" because "*it was understood that China was strengthening its position across the world in terms of the upstream part of minerals*."

It was only during the diplomatic lead up to the 2015 Paris Agreement[16]—where parties committed to "[hold] *the increase in the global average temperature to well below 2°C above pre-industrial levels and [pursue] efforts to limit the temperature increase to 1.5°C*" (Article 2.1(a))—that the energy transition began to rise to the top of the international agenda. The Agreement also emphasized the need for "*making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development*" (Article 2.1(c)), prompting a surge in public and private sector interest in so-called "green" technologies. Aspiring deep sea miners jumped on the bandwagon and began shaping a shiny new narrative to grasp for a much needed "social license to operate".

* Greenpeace USA hired a team of investigative journalists to conduct interviews with government officials, defense contractors and deep sea mining industry executives to ask for their perspectives on the linkages between deep sea mining, national security and defense.

March 2013
Lockheed Martin, through its UK subsidiary UK Seabed Resources (UKSR), obtains exploration licenses in the CCZ from the ISA.

2015
Nautilus releases an environmental and social benchmarking report to reassure investors about Solwara 1. Environmental groups criticize the report for conflicts of interest and failing to address concerns raised in its Environmental Impact Statement (EIS).

1.2. Climate change offered a chance for credibility, but the story was rejected by science, markets, and governments

a. Tech pundits co-opted the energy transition to frame the public debate on deep sea mining

Deep sea mining companies latched onto climate change in a desperate attempt to transform the energy transition into an opportunity to attract investors and political patrons. Newer entrants to the market, like Canada-based The Metals Company (TMC, formerly DeepGreen Metals), began describing themselves as "*an explorer of the world's largest estimated undeveloped source of critical battery metals*".[17] Until very recently, TMC planned to apply for an ISA contract to extract minerals from the ocean floor by June 2025 via its contractor relationship with the Pacific Island state of Nauru,[18] and—despite its subsidiary TMC USA applying for a license unilaterally through the U.S. (as described in the Introduction)—in this fast-changing arena, it still may.

Meanwhile, TMC's CEO, Gerard Barron, never missed a chance to deploy a metaphor to downplay the environmental impacts of deep sea mining and mislead audiences, regularly describing polymetallic nodules as "potato-sized rocks" lying on a "golf driving range", or promising "a battery in a rock."[19] In its presentations to investors, TMC purported that deep sea mining-sourced metals could enable the manufacturing of 280 million electric vehicles (EVs) with less environmental impact than terrestrial mining.[20] Electrifying the world's passenger car fleet, the company claims, would require "*56 million tons of nickel, 7 million tons of manganese, 7 million tons of cobalt, and 85 million tons of copper.*"[21]

But these dated figures no longer hold up to scrutiny in the rapidly evolving EV battery market.[22]

Impossible Metals, another North American startup, promoted a similar narrative: "*A growing population, continued urbanization, emerging market economies and the transition to carbon neutral energies will continue to demand critical metals in volumes,*" the firm writes.[23] The five-year-old company headquartered in California, that's on a mission to develop a Remote Operated Vehicle (ROV) able to collect underwater minerals, has claimed to be "sustainably-minded" and shows off a trophy room of "planet-friendly" logos on its website, including B-Corp and Pledge 1%, claiming that the company "directly supports" a number of Sustainable Development Goals (SDGs). But in reality, these initiatives do little to monitor corporate activities against any credible environmental or social standard.

It also appears that the key data underlying the industry's pro-deep sea mining narrative was either internally produced by the companies themselves or authored in academic journals by people with a vested interest in the deep sea mining industry. For example, an often-cited academic paper published in 2020 in the *Journal of Cleaner Production*,[24] comparing the life-cycle climate change impact of deep sea mined nodules to land ores, was authored by (among others) Daina Paulikas and Saleem H. Ali, who at the time were both serving as advisors to TMC (formerly DeepGreen).[25] Paulikas now advises the Seafloor Minerals Fund (SMF), a newcomer in the deep sea mining market. Another of the article's authors, Erika Ilves, who once dreamt of mining the moon,[26] is currently the Chief Strategy Officer at TMC.

March 2017
Maersk invests $25 million in DeepGreen, including vessel provision and project management support for CCZ exploration.

June 2017
Mining.com hails DeepGreen as experiencing a "Tesla moment." The company markets itself as environmentally progressive and aligns with Glencore, Maersk, and Fiore Group.

November 2019
Nautilus files for bankruptcy after spending $460 million. PNG absorbs an estimated $144 million in losses.

She earned more than $1.4 million in cumulative revenues in 2023, $1.7 million in 2024, and up to $6 million in 2021.[27] Ilves and her husband, TMC's CEO Gerard Barron, together earned a staggering $20 million that year, despite the company having generated zero profit to date.[28]

MINERALS FOR THE ENERGY TRANSITION
DEMAND, SUPPLY & UNCERTAINTY

Demand projections vary greatly depending on the assumptions applied (e.g., different energy and technology mixes, resource intensity estimates, recycling rates, future policies, and technological advancements).

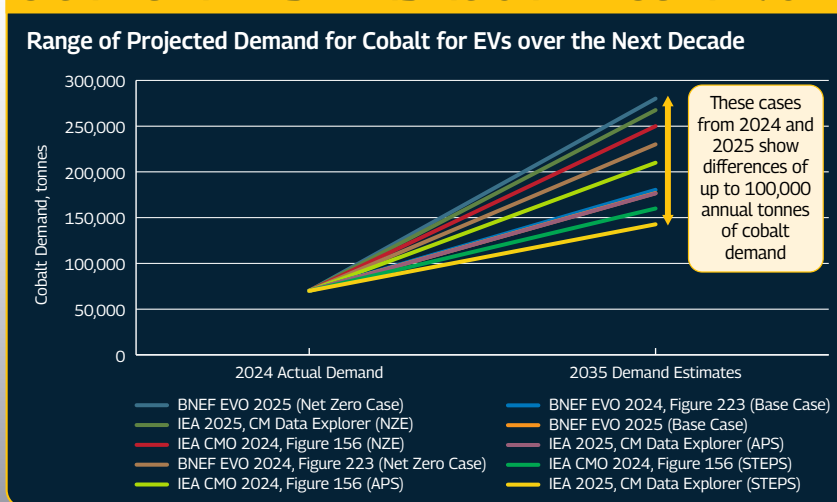
There is further potential to reduce demand estimates through various strategies like substitution and sufficiency (RMI, 2024) that are not contemplated by the projections shown.

Furthermore, the International Energy Agency (IEA) projects at least 50% of cobalt demand for all markets could be met with recycled supply by 2050 (IEA, 2025).

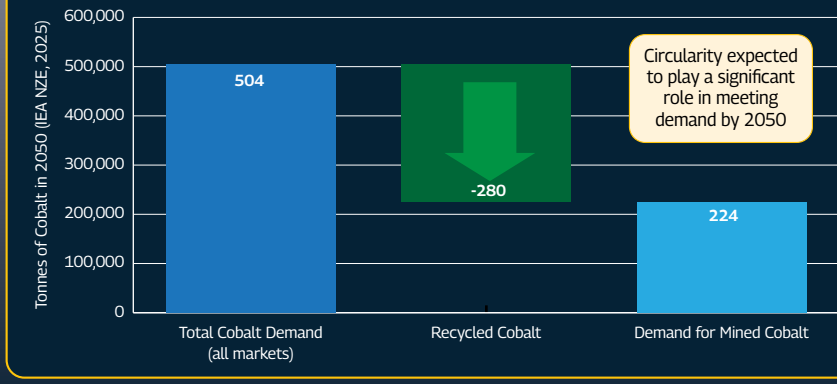
Demand projections shift every year as markets, technologies, and solutions evolve.

Why mine the deep sea for minerals that may not be required?

PROJECTIONS FOR COBALT DEMAND CAN VARY SIGNIFICANTLY DEPENDING ON THE SCENARIO



BY 2050, RECYCLING IS EXPECTED TO ACCOUNT FOR OVER HALF OF COBALT SUPPLY



Source: IEA, BNEF, RMI data; full citations in endnote[29].
Acronyms: APS – Announced Pledges Scenario (IEA); BNEF – Bloomberg New Energy Finance; CMO – Critical Minerals Outlook (IEA); EVO – Electric Vehicle Outlook (BNEF); IEA – International Energy Agency; kt – kilotonnes (thousands of metric tonnes); NZE – Net Zero Emissions Scenario (IEA); RMI – Rocky Mountain Institute; STEPS – Stated Policies Scenario (IEA).

April 2020
DeepGreen acquires Tonga Offshore Mining Limited (TOML), holder of an ISA exploration contract sponsored by the Kingdom of Tonga.

April 2020
DeepGreen releases a white paper advocating deep sea mining as a greener alternative to land-based mining.

November 2020
Impossible Metals is founded, claiming to develop robotics that "harvest" nodules without seabed destruction.

In 2023, Paulikas, Ali and Ilves were also featured in an article in the journal *Biodiversity and Conservation*, along with TMC's Environmental Manager, Michael Clarke, in which they asserted the opinion that deep sea mining is necessary to supply the green energy transition, but ultimately concluded that it is "a formidable task" to compare biodiversity between the deep sea and rainforests in order to assess the impact of deep sea mining.[30] But TMC was not alone. In 2022, an academic paper arguing in favor of the low carbon footprint of polymetallic nodules, again published in the *Journal of Cleaner Production*, was co-authored and designed by Chris Duhayon, who was Metallurgical R&D Manager at Global Sea Mineral Resources (GSR) at the time.[31] GSR is a subsidiary of the DEME Group, a Belgian company specializing in dredging and building marine infrastructures, which holds a Belgium-sponsored exploration contract in the CCZ that expires in 2028.[32]

The findings of these studies have been questioned. Planet Tracker, an ESG-focused think tank, has criticized both Paulikas et al.'s 2020 paper and the GSR-funded research for their methodological bias.[33] The former excluded 95% of the deep sea nodules' manganese content from its life-cycle impact assessment, while the latter failed to apply decarbonized refining technologies to its land-based mining comparison—despite using such assumptions for seabed processing. In addition to these critiques, a 2023 peer-reviewed study by Benjamin Fritz et al. found that, under certain realistic conditions, mining polymetallic nodules from the deep sea could result in a 28% higher climate impact than producing the same metals from land-based sources. Notably, the Fritz at al. study is one of the few independent life-cycle assessments not funded by a deep sea mining company.[34]

Even TMC itself acknowledged the uncertainty of comparing the impact of deep sea mining to land-based mining. In its financial filings, the company warned: "*It may also not be possible to definitively say whether the impact of nodule collection on global biodiversity will be less significant than those estimated for land-based mining.*"[35] These internal caveats and external critiques show that the environmental narrative used to justify deep sea mining is deeply contested—and far from scientifically supported.

b. ... but deep sea mining is losing support from the electric vehicle and battery industries

As early as March 2021, major car makers BMW Group and Volvo Group joined forces with WWF, Samsung SDI and Google to sign a call for a moratorium on deep sea mining.[36] *"Before any potential deep seabed mining occurs, it needs to be clearly demonstrated that such activities can be managed in a way that ensures the effective protection of the marine environment"*, the four companies declared to the Associated Press.[37] They have since been joined by Volkswagen and Scania, Polestar, Renault and Rivian, along with several battery manufacturing and charging infrastructure companies, including Addvolt, Charge and Northvolt. As of May 2025, 64 companies from all sectors had signed the Business Statement calling for a moratorium on deep sea mining activities, and committed not to source minerals from the deep sea, to exclude such minerals from their supply chains, and not to finance deep sea mining activities.[38]

Meanwhile, several American automakers that have not signed onto the Business Statement, including GM, Ford and Tesla, are members of the Initiative for Responsible Mining Assurance (IRMA). IRMA is a certification and accountability standard for industrial-scale mining that promotes best practices in environmental and social responsibility. IRMA does not certify or endorse deep sea mining, citing concerns about the current lack of scientific knowledge, the inability to audit impacts, and the risk that IRMA's Standard could be inappropriately

June 2021
DeepGreen (soon to be reenvisioned as The Metals Company), via Nauru, triggers the ISA's "2-year rule," pressuring the Authority to finalize mining regulations by mid-2023.

The Metals Company's Chief Financial Officer stated that "[w]hether [the ISA] has finalized what the legal framework for deep sea mining will look like or not, we'll file our permit application and force them to process it."

applied to the deep sea context, a stance with significant implications for automotive manufacturers and their supply chain decisions.[39] Members of IRMA effectively have a de facto moratorium on deep sea minerals as they should source only from IRMA-assessed mines. Regulations such as the Corporate sustainability due diligence directive (CSDDD), adopted by the EU in June 2024, are likely to further deter car makers and battery manufacturers from exposing their supply chains to environmentally and socially undesirable extractive processes like deep sea mining.[40]

c. ... as technology shifts to new battery chemistries

In addition to the ecological argument, EV and battery manufacturers have identified other reasons for doubting the purported benefits of deep sea mining. The Blue Climate Initiative emphasizes that a technological shift is undermining the claim that deep sea mining is required to achieve the energy transition. They contend that "*rapidly expanding sales of Lithium Iron Phosphate [LFP] and other EV batteries that don't use metals sought to be mined from the deep sea have eliminated the purported need for DSM to meet the growing demand for EVs.*"[41] According to the International Energy Agency: "*Over the last five years, LFP has moved from a minor share to the rising star of the battery industry, supplying more than 40% of EV demand globally by capacity in 2023, more than double the share recorded in 2020.*"[42]

Batteries using LFP chemistries are increasingly preferred for certain applications due to their lower cost, safer operation, and avoidance of critical metals like cobalt and nickel.[43] In some cases, these chemistries also emit less greenhouse gas over their life cycle than traditional NMC (nickel manganese cobalt oxide) batteries—especially when supply chains rely on carbon-intensive mining and refining. Prominent battery manufacturers such as BYD, CATL and Northvolt have announced a host of expansion plans for sodium-ion batteries, which could contain no nickel or manganese.[44,45,46] However, TMC keeps feeding briefs to investors focused on NMC chemistry,[47] despite a changing battery chemistry landscape that has reduced demand for manganese and nickel in EV batteries.[48]

Impossible Metals takes this dissonance even further. Rather than adapting to a technological shift away from nickel- and cobalt-heavy battery chemistries, CEO Oliver Gunasekara has publicly argued that deep sea mining could reverse this trend by lowering the cost of these metals—thus removing the incentive to innovate beyond them.[49] This self-serving logic reflects a broader industry stance: rather than responding to material and technological innovation, deep sea mining proponents seek to sustain outdated chemistries in order to justify their business models. It is a clear example of how deep sea mining remains a supply-driven solution in search of demand.

By undercutting the market signals driving the transition to safer, more scalable battery chemistries like LFP and sodium-ion, this strategy risks locking the clean energy sector into less sustainable, extraction-heavy supply chains. In doing so, deep sea mining not only lags behind technological innovation—it threatens to derail it. What's being sold as a solution for the future is, in reality, an attempt to resurrect the economics of the past.

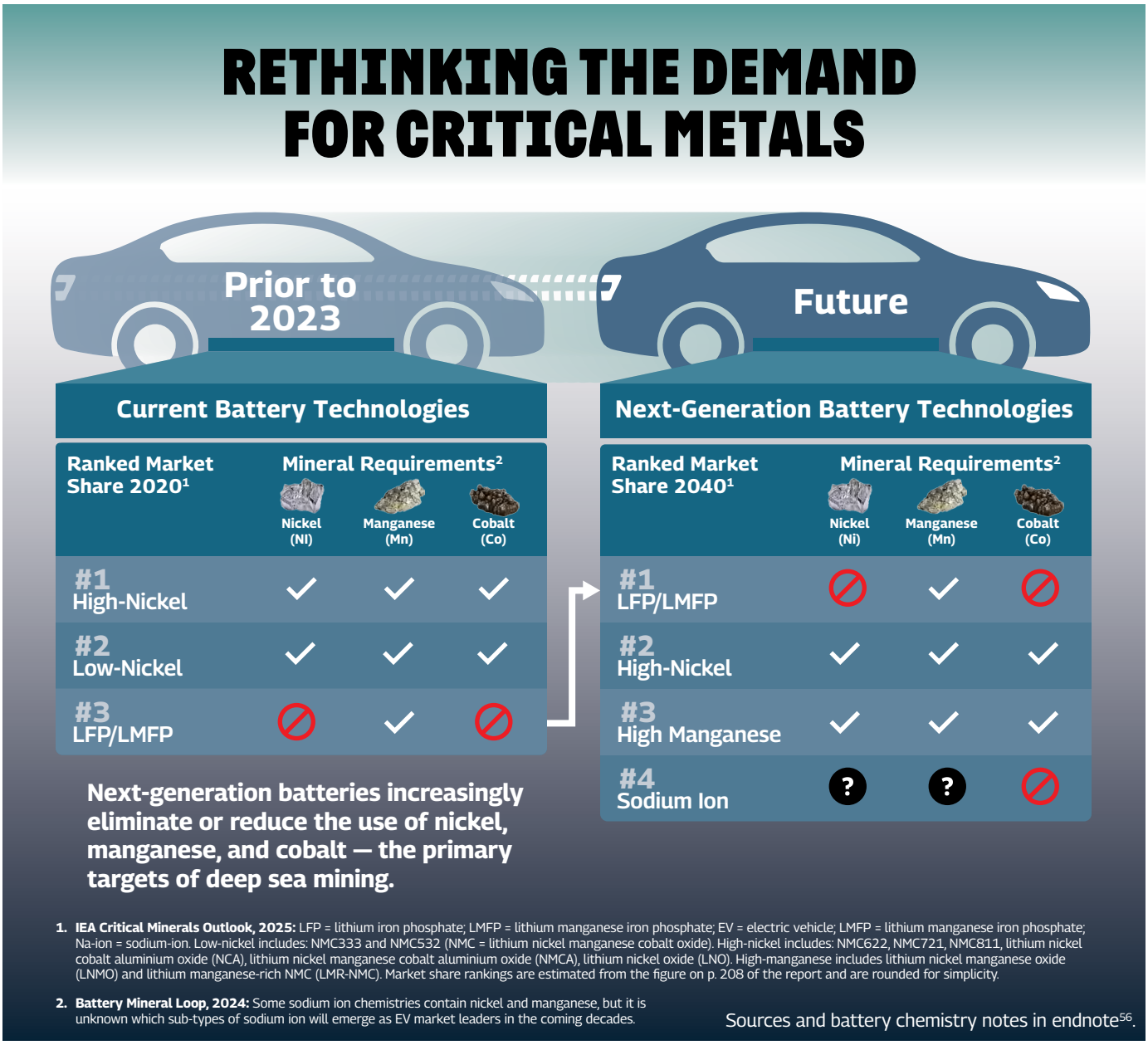
d. ... leading to overproduction and market volatility—and deterring investors and governments

While the metals that could be derived from deep sea mining may be critical in that they are needed for specific applications, they are not currently supply limited. Changing battery chemistries, coupled with overproduction, has led to rapid declines in the value of metals which could be derived from deep

June 2021
Deep Sea Mining Science Statement: Over 800 marine scientists and policy experts sign a global statement urging a moratorium on deep sea mining, warning that the science is insufficient to proceed responsibly.

August 2021
The New York Times reports that Heydon allegedly gained access to confidential ISA data and had prime exploration sites held while he sought developing-country sponsors.

sea mining. Both cobalt and nickel are experiencing historic surpluses. Nickel is experiencing a 30% slump from its yearly high.[50] This surplus is expected to continue beyond 2026, with a 20% decline in global nickel production in 2025.[51] Cobalt is experiencing a similar oversupply, with cobalt prices reaching their lowest since 2016,[52] and demand weakening as EV manufacturers transition away from cobalt battery chemistries.[53,54] In order to curb cobalt oversupply, the Democratic Republic of Congo, the world's largest cobalt producer, suspended cobalt exports for three months, starting on 22 February 2025.[55]



The future of batteries is cobalt-free. Advances in battery chemistry—from sodium-ion to solid-state—are moving beyond the metals targeted by deep sea mining, weakening its market rationale. Source: Greenpeace.

September 2021
DeepGreen merges with the SPAC Sustainable Opportunities Acquisition Corporation to form The Metals Company, trading as "TMC" on NASDAQ.

Fall 2021
Defense-Focused VC DYNE Asset Management Founded—led by Former Navy intelligence officer Tom Hennessey and ex-JP Morgan banker Matthew Kibble to "support AUKUS and QUAD initiatives" and invest in strategic tech, including seabed exploration.

This extreme volatility highlights how unpredictable the critical minerals sector can be—and why deep sea mining carries extraordinary financial risk. Capital-intensive extractive ventures are especially vulnerable to these market swings, yet proponents often underestimate the true costs of bringing such projects online. "First-of-a-kind" deep sea mining operations lack established benchmarks and are typically led by actors with little experience managing complex megaprojects. According to McKinsey, for mining megaprojects valued at $1 billion or more, capital cost overruns average at 79% above initial budgets, and schedule delays average at 52% longer than originally planned.[57] These structural risks are not unique to land-based mining. A 2025 investigation by Iceberg Research found that The Metals Company—the most prominent deep sea mining firm—continues to promote implausible financial projections, including profit margins exceeding those of Microsoft, while failing to publish a pre-feasibility study or secure expert validation of its cost assumptions.[58]

The volatility of these commodities renders accurate financial projections difficult and value propositions tenuous. In 2018, in a purported attempt to provide real-world estimates of the value of polymetallic nodule mines, the ISA introduced an MIT financial model. Using this initial model, a hypothetical 3-megaton nodule mine was valued at $2.9 billion (inflation adjusted to 2025).[59] But this is wildly overestimating the contribution of manganese, and a 2023 update reduced the valuation to $1.6 billion.[60] Both estimates relied on peak prices for cobalt and nickel—prices that have since plummeted. By early 2025, the ISA's hypothetical mine stood at just $1.3 billion dollars in projected value. In total, the hypothetical mine has lost over $1.6 billion in modeled value since 2018—demonstrating how quickly the economic case for deep sea mining can erode under real-world market conditions.

The refusal of the tech and automotive sectors to embrace deep sea mining-sourced minerals has made it difficult for would-be deep sea mining tycoons to attract the huge investment sums that would be required to take their industry to scale. It has also made it even harder to obtain the political support needed for the industry to actually start. Increasingly, governments themselves are rejecting the industry's core claims and turning to alternatives, including recycling. Nickel is already readily recycled and over 50% of U.S. nickel consumption in 2023 was from recycled nickel,[61] while recycling accounted for approximately 25% of cobalt consumption in 2023[62]. These rates are expected to rise.

Some of the strongest opposition comes from the Pacific, where deep sea miners are looking to strike first. As the President of Palau declared at the ISA in July 2024: "*The deep sea mining industry claims that extracting minerals from the ocean floor is essential for the green transition. However, numerous independent reports reveal that there are viable alternatives... We can obtain the necessary minerals from sources that are far less damaging to our planet.*"[63] This is expressed even more deeply by Indigenous voices from Pacific Islands. Solomon Kaho'ohalaha, a Hawaiian elder and co-chair of the Pacific Islands Heritage Coalition states: "*This culture of ours is based on our intimate relationship with the ocean, and any harm done to the ocean is a direct attack on our way of life.*"[64] For Kaho'ohalahala and others, the seabed is not a site of untapped wealth—it is part of a sacred genealogy, a place of origin and responsibility, not profit.

This rejection of deep sea mining and the industry's attempted climate justification—what many critics call a greenwash—is adding political weight to the growing movement for a moratorium.

May 2022
TMC releases its first Impact Report, portraying itself as a sustainable source of battery metals.

September 2022
TMC initiates first mining test in the CCZ just seven days after receiving surprise ISA authorization.

Hawaiians Ekolu Lindsey III and Solomon "Uncle Sol" Kaho'ohalahala offer an oli (chant) inviting the ancestors to help negotiations at the March 2024 International Seabed Authority, where the men participated to express concerns that deep sea mining violates the traditional values of their people.

Together, these trends are putting the already fragile deep sea mining business model at even greater risk. Faced with mounting obstacles to their questionable energy transition claims, since around 2022 prospective deep sea miners have once again started to reshape their strategic narrative, this time returning to the home turf of the first movers in the industry: national security, specifically targeting the U.S.

Far from advancing the green transition, deep sea mining is increasingly being justified through the lens of military strategy and geopolitical competition. But like every other self-serving pivot, this is being driven by key players in the deep sea mining industry's never-ending quest to justify their existence and finally make some money, rather than the current priorities or demands of the defense industry.

From Cold War Cover-Up to Corporate Capture

In 1975, investigative reporter Jack Anderson revealed the CIA's $4.7 billion deep sea mining boondoggle (inflation adjusted to 2025). "Project Azorian"—a personal project of then Secretary of State Henry Kissinger—was a covert CIA operation to salvage a Soviet submarine from the floor of the Pacific, about 1,600 miles northwest of Hawai`i and about 16,500 feet deep.[65,66] To build a vessel capable of recovering the submarine undetected, the CIA tapped eccentric billionaire Howard Hughes to launch a venture to mine the polymetallic nodules of the deep Pacific and provide the perfect cover for Project Azorian. The result was the *Glomar Explorer*, a deep sea mining ship equipped with a capture vehicle deployed from a moon pool hidden in the hull. Defense contractor Lockheed Corp. built the capture vehicle.[67]

The operation was an intelligence failure and only recovered one-third of the submarine. The Soviets had vessels tailing *Glomar Explorer* throughout. Ironically, Anderson's leak produced the only political benefit: with the operation unmasked, the U.S. released a video of the at-sea burial of six Soviet sailors and returned the ship's bell to the Kremlin—an unexpected moment of Cold War cooperation.

A few years earlier, in August 1970, a fledgling company called Deepsea Ventures Inc. had announced that it had completed the "*world's first successful test of a system*

Glomar Explorer, c. 1974, built by Howard Huges under CIA contract as cover for Project Azorian. U.S. Government Photo

December 2022
Recycling innovators like Electra and Redwood Materials announce breakthroughs in extracting high-value metals from used batteries.

2023-2024
TMC spends nearly half a million dollars lobbying the U.S. Congress and multiple federal agencies to influence NDAA votes.

designed to mine the deep sea",[68] on the Blake Plateau, 120 miles off the coast of South Carolina. A cargo ship converted into the United States' first deep sea mining ship had lifted "10 to 60 tons of nodules per hour", from some 3,000 feet below the surface.[69] Deepsea Ventures' founder, John E. Flipse, predicted optimistically that, "*a single ship designed for the operation could gather a million tons of Pacific Oceans nodules in a year*". The South Carolina *News and Courier* declared that: "*Mining the ocean for manganese and other valuable minerals could lead to a unique multi-billion dollar industry.*"[70]

The rush for this mythical deep sea bonanza was just getting started. Companies began meddling in seabed exploration, including major players in the mining, oil and gas, steelmaking, and defense industries, and several consortia were formed to compete for seabed wealth. Among them, the Ocean Minerals Company (OMCO) stands out because it included a defense contractor: Lockheed Corp.[71]

Project Azorian's deep sea mining cover story unintentionally boosted commercial interest in seabed minerals. But Kissinger quickly denied Deepsea Ventures' request for exclusive mining rights in the Pacific's Clarion-Clipperton Zone,[72,73] with the Department of State emphasizing that the appropriate avenue for addressing seabed mining issues in the high seas was the ongoing United Nations Convention on the Law of the Sea (UNCLOS) negotiations.[74] This rejection indicated the U.S. government's openness at that time to multilateral agreements over chaotic, unilateral scrambles for oceanic resources. It also signaled its reluctance to endorse private exploitation of the seabed without an international framework.

Project Azorian was a failure. It also served to buoy a nascent and likely economically non-viable industry. By supporting the cover story, the CIA funded research into the viability of deep sea mining, propped up media interest in the industry, and financed the construction of a vessel designed for deep sea mining, thus removing the financial burden from its favored defense company: Lockheed Corp., which would continue using the *Glomar Explorer* for deep sea mining exploration for almost two decades.

Over the next few years, while the UNCLOS negotiations lagged, the evolution of a new American law would usher Lockheed Corp. further towards deep sea mining. That law was the 1980 Deep Seabed Hard Mineral Resources Act (DSHMRA),[75] passed as a stopgap measure while the international negotiations were underway. But, though UNCLOS was adopted in 1982, the U.S. never ratified the treaty. Instead, DSHMRA established a proxy framework designed to allow U.S. citizens to pursue seabed mining exploration activities in the high seas.[76] In 1984, NOAA issued exploration licenses based on the DSHMRA for four sites beyond U.S. jurisdiction in the CCZ. Two of these original DSHMRA licenses—USA-1 and USA-4—remain active and are periodically renewed by their holder: defense giant Lockheed Martin.[77]

The regime's low profile persisted for decades—until April 2025, when TMC ignited controversy by becoming the first company to submit an application for a commercial deep sea mining license under DSHMRA. This bid to activate the Cold War–era framework has drawn sharp international rebuke, highlighting concerns over unilateral U.S. action and the erosion of the global seabed regime. Unlike Henry Kissinger, President Trump's Executive Order on 24 April 2025 signals that the current U.S. administration may look favorably on TMC's application, bypass UNCLOS, and undermine multilateral governance of the common heritage of humankind: the deep sea.

March 2023
Lockheed Martin sells UKSRL and its CCZ licenses to Norway's Loke Marine Minerals, marking its exit from deep sea mining.

"This acquisition accelerates Loke's exploration plans, and ambition to deliver the safe production of nodules with as minimal an environmental impact as possible."
– Former Loke CEO Walter Sognnes

© Solvin Zankl / Greenpeace

March 2023
Jervois Global suspends construction of the only primary cobalt mine in the U.S. due to weak market prices.

March & July 2023
ISA Council agrees that no commercial mining applications should be approved in the absence of a finalized regulatory framework.

SECTION 2
THE SECURITY ANGLE: REAL DEMAND OR MANUFACTURED THREAT?

2.1. Dredging up decades-old "national security" concerns

The previous section shows how the second generation of deep sea miners that emerged in the 2010s developed a self-serving green narrative aimed at convincing policymakers and investors that deep sea mining was crucial to meet the rising demand for minerals to fuel the energy transition. Now that this position is facing headwinds, these fickle deep sea entrepreneurs are jumping ship. Confronted by opposition to their green transition tale from car makers and tech leaders, they are eager to embrace politically opportunistic "national security" storylines.

"*In American politics, labeling something a matter of 'national security' automatically elevates its importance*", wrote the political scientist Daniel Drezner in *Foreign Affairs* in August 2024.[78] And supplying the U.S. economy with a new source of critical minerals independent from so-called "countries of concern" is no exception: whether the minerals are presented as necessary for batteries to fuel the energy transition or for military purposes, the industry hopes that recasting deep sea mining as an urgent matter of national security will up the ante. But this desperate pivot demonstrates yet again that greed, not need, is driving the push to start deep sea mining.

Far from advancing the green transition, deep sea mining is increasingly being justified through the lens of military strategy and geopolitical competition. This reveals a dangerous shift: deep sea mining contractors who once positioned themselves as climate change heroes, are now courting defense funding and appealing to national security imperatives to secure legitimacy and investment.

May 2023
Maersk reduces its TMC stake from 9% to 2%, intending to divest entirely.

July 2023
Canada becomes the 18th ISA member state to formally support a moratorium on deep sea mining.

a. Canada-based The Metals Company invokes U.S. national security

In early 2022, TMC began actively framing deep sea mining as a national security imperative. While still publicly emphasizing its role in enabling the green transition, TMC's lobbying efforts—targeting defense and industrial policy stakeholders—reflect a strategic effort to re-anchor deep sea mining within U.S. national security discourse, reviving Cold War-era narratives that once positioned seabed extraction as a matter of geopolitical advantage.[79]

By January 2024, Gerard Barron made this focus explicit in an op-ed for C4ISRNet—a media outlet dedicated to defense and government technology—entitled "*Deep sea mining of polymetallic nodules needed for national security*."[80]

Greenpeace activists confront the Hidden Gem, a vessel owned by Allseas and commissioned by Canadian mining firm The Metals Company (TMC), as it returns to Manzanillo, Mexico after test mining in the Clarion-Clipperton Zone. Protesters from Mexico and Aotearoa deliver a clear message: Stop Deep Sea Mining.

A transition in TMC's talking points is also evident in its own press releases. The company's rhetoric has shifted repeatedly to match the political moment, revealing a pattern of opportunistic storytelling aimed at whatever message will unlock investor interest or policy support. Just a few years ago, TMC press releases trumpeted the projected volume and dollar value of the metals contained in polymetallic nodules—framing the seabed as a literal goldmine.[81] When cobalt prices collapsed and their central talking point eroded, TMC swiftly shifted to promoting nickel as the new cornerstone of their business model, abandoning their moral appeals about ethical sourcing and child labor in the Democratic Republic of the Congo previously used to justify mining the ocean floor.[82,83]

Beginning in 2022—and increasingly throughout 2023 and 2024—TMC also began minimizing or omitting financial projections in its investor materials. Whereas earlier filings and investor decks included bold revenue forecasts and billion-dollar valuations, more recent disclosures have conspicuously avoided such claims.[84] This coincided with TMC's increasing use of national security framing: positioning itself as vital to U.S. strategic autonomy and lobbying for public investment in domestic nodule processing. TMC press materials began touting defense relevance, positioning its operations as essential to U.S. competitiveness with China and critical mineral independence, signaling a deliberate pivot from climate-solution branding to defense-sector alignment.[85,86]

This rhetorical sleight-of-hand reflects not a principled commitment to either sustainability or security, but a company scrambling to remain relevant and—most importantly—funded.[87,88,89,90]

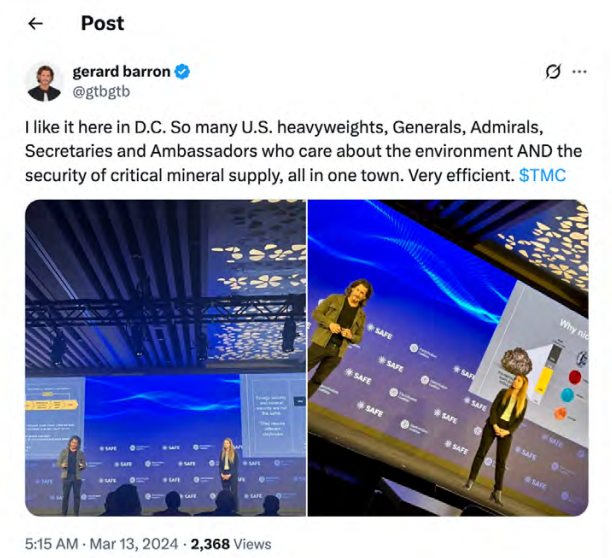
July–December 2023
Congressional Republicans lobby U.S. agencies, promoting deep sea mining as vital to national security.

October 2023
Launch of DYNE Maritime: A Defense-Oriented Deep Sea Fund—a $100 million fund targeting dual-use technologies in ocean exploration and monitoring, explicitly positioned within the AUKUS framework—framing seabed technologies as strategic assets.

SAFE Harbor? TMC Courts the Defense Sector While Experts Cast Doubt on Security Claims

TMC's public movements—where it speaks, who it meets with—show that the company has increasingly been trying to insert deep sea mining into the U.S. national security agenda. One forum for achieving this goal is the annual SAFE (Securing America's Future Energy) Summit in Washington, D.C.

In February 2022, 17 retired generals, admirals, and officers—including 13 members of SAFE's Energy Security Leadership Council (ESLC)—sent a letter to the U.S. Department of Defense urging support for seabed mineral extraction. Though the U.S. military's actual demand for metals like cobalt and nickel remains limited, the letter claimed that "*defense systems increasingly rely on critical and rare earth minerals.*"[91] The letter closely paralleled TMC's own advocacy,[92] reflecting a shared narrative of deep sea mining's role in securing critical mineral supply chains.



TMC CEO Gerard Barron celebrates "making friends" with U.S. national security leaders at a D.C. critical minerals forum in March 2024—part of the company's pivot from environmental to geopolitical messaging.

By 2023, TMC had secured sponsorship at the SAFE Summit, a platform that convenes former military brass and business leaders to advance U.S. energy security. In March 2024, TMC CEO Gerard Barron took the stage at the SAFE Summit to pitch a new strategy: "*forget about mining, [and] focus on refining.*"[93] After the event, Barron posted on LinkedIn: "*I like it here in D.C. So many U.S. heavyweights, Generals, Admirals, Secretaries and Ambassadors who care about the environment AND security of critical mineral supply, all in one town. Very efficient.*"[94]

Yet this message shifted leading up to President Trump's April 2025 Executive Order, which signaled White House support for using the 1980 Deep Seabed Hard Mineral Resources Act (DSHMRA) to issue deep sea mining licenses. While the 1980s legal framework already existed—though it had never been used to authorize commercial extraction—TMC quickly announced it would proceed under the existing U.S. seabed mining code, capitalizing on the political opportunity generated by the Executive Order. In doing so, the company pivoted from its former focus on U.S.-based refining and paused its long-pursuit of a commercial license through the International Seabed Authority (ISA), instead turning to NOAA for direct commercial mining approval.

The move suggests that TMC shifts its narrative opportunistically with the political winds—possibly seeking a bump from investors amid an increasingly precarious financial position—not out of any principled commitment to U.S. industry or genuine defense needs. SAFE's public embrace does not equate to a wider endorsement of deep sea mining from active U.S. defense institutions. SAFE's high-profile military figures are retired, and many are now affiliated with private sector interests. A 2024 letter obtained by *The Wall Street Journal*[95] called on U.S. Senators to ratify UNCLOS in part to preserve seabed claims under DSHMRA, but deep sea mining was only one in a long string of justifications for UNCLOS ratification. There is no evidence that deep sea mining is a core driver of U.S. military planning or procurement.

November 2023
Senate Resolution introduced to urge UNCLOS ratification.

December 2023
The FY2024 NDAA directs the Department of Defense (DOD) to assess domestic capacity for mining and processing polymetallic nodules.

At the SAFE Summit in April 2025, Leticia Carvalho, Secretary-General of the ISA, offered a counterpoint to the emerging security narrative. In her keynote, she emphasized that seabed minerals fall under international jurisdiction and "*the [International Seabed] Authority is the only international body legally mandated to govern mineral-related activities in the seabed beyond national jurisdictions...our mandate is clear: to manage these resources for the benefit of all humanity ... the deep seabed belongs to no one, but to all of us.*"[96]

b. Connecting the dots: playing on geopolitical fears to cash in on the "mineral sovereignty" rush

Deep sea mining tycoons are looking to capitalize on concerns over the vulnerability of U.S. critical mineral supply chains, invoking "national security" in pursuit of public funding opportunities.

One frank proponent of the industry's latest strategy is the CEO of U.S.- and Canada-based deep sea mining company Impossible Metals, Oliver Gunasekara. When asked by a freelance journalist whether he has identified the defense sector as a potential market for deep sea mining, Gunasekara replied without hesitation: *"Absolutely. There is a growing recognition post-Ukraine war that critical minerals can be weaponized."*

The combination of the Covid-19 pandemic, the wars in Ukraine and the Middle East, and the shifting geopolitical fault lines, is leading Western countries to worry about their dependence on foreign sources for the raw materials needed for their energy, civil transport, and healthcare systems, particularly when it comes to critical minerals. Deep sea miners are eager to exploit these concerns for their own profit.

Although critical minerals may be abundant in the Earth's crust and scattered around the world, figures reveal a highly concentrated production landscape for many of the critical minerals targeted by deep sea miners, largely due to voluntary mining policies and specialization strategies implemented by some countries over the last decades. As a result, the Democratic Republic of the Congo (DRC) in 2024 extracted 67% of cobalt, Indonesia 64% of nickel, Chile 24% of copper, and China 61% of magnet rare earth elements (REE). China is almost unavoidable in mineral refining, of which it controls 91% for rare earths, 78% for cobalt, and 44% for copper. While Indonesia operates 43% of nickel refining capacity, this is mostly controlled by Chinese companies.[97]

What is a "critical mineral"?

Two factors make up the "criticality" of a mineral: the risks threatening its supply, and its importance for a country. Critical minerals include those that are geologically rare, as well as those that are abundant but subject to extreme pressure, whether because of future demand (e.g. copper, bauxite, and rare earths), or because of the political, environmental and social contexts of their mining, especially when it is highly geographically concentrated (e.g. cobalt in the Democratic Republic of the Congo).

This global interdependence on critical metals is causing apprehension among Western economies that "foreign countries of concern"[98] could manipulate the market to take advantage of their dominant position on supply chains. In response, the U.S. and the European Union have recently launched a series of strategies to onshore (creating new home-based capacities) or at least "friendshore" (securing capacity in allied countries) production and processing capacities for strategic raw materials. The E.U. Critical Raw Materials Act (2024)[99] and the U.S. Executive Order 14017 on America's Supply Chains (2021)[100] were both enacted for this purpose, including to encourage the reopening of local mines. Among the many concrete

January 2024
Norway becomes the first country to formally approve deep sea mining within its jurisdiction.

January 2024
Maverick metal recycler Redwood Materials breaks ground on a fossil-fuel-free battery recycling facility in South Carolina.

mining projects already in the pipeline is the reopening of a rare earth mine in California that went bankrupt in 2015, and at least fifty mine reopening projects aimed at exploiting Europe's abundant resources, from copper in Spanish Galicia to Finnish cobalt and lithium at the Franco-German border, all part of the continent's planned "mining renaissance".

c. Deep sea mining opportunists contrive support from Republican defense hawks

Despite these onshoring and friendshoring efforts, the desire to secure mineral supply chains in tumultuous times has been obsessing Capitol Hill officials, and deep sea mining proponents have been vying to convince policymakers that mining the deep sea is now a matter of national security. It is against this backdrop that Oliver Gunasekara of Impossible Metals claimed that *"the only resource of scale that can really change [Chinese dependency] is deep sea minerals"* to an independent researcher hired by Greenpeace USA. However, the most strident efforts to unite the interests of deep sea mining and the defense industry have arguably been led by TMC. In search of fresh support for deep sea mining, from an outside perspective it appears the company has built a new influencing strategy targeting three key players in the U.S. public debate: former military officials and veterans, Republican Members of Congress, and the Department of Defense (DOD).

The National Defense Authorization Act (NDAA), which sets the levels of funding for the U.S Army and for defense priorities, is the key piece of legislation that TMC has been seeking to influence to achieve its goals. With a record-breaking $883.7 billion in spending voted for the fiscal year 2025—$849.9 billion of which was allocated to DOD[101]—the NDAA accounts for more than half of the entire discretionary spending of the U.S. government. Therefore, it encompasses a large array of policies considered matters of national security, going far beyond *mere* military spending. As a result of the multiple policies adopted in recent years to bolster domestic critical mineral production and diversify sourcing, and in response to bipartisan concerns over China's mineral dominance, the NDAA now includes many provisions regarding critical mineral supply chains, procurement, and stockpiling policies. In particular, the NDAA for fiscal year 2024 (NDAA FY24) required DOD to develop a strategy, within one year, to secure critical mineral supply chains, independent from "countries of concern", by 2035.[102] The NDAA FY25 mandates the DOD to provide a comprehensive feasibility study focused on domestic refining capabilities for polymetallic nodules to the House Armed Services Committee.[103]

Records show that TMC spent nearly half a million dollars over two years to hire two firms, the Vogel Group and Bracewell LLC, to lobby Congress and influence the NDAA votes in June 2023 and June 2024.[104] In the House Report on the NDAA FY24 released in June 2023, the House Armed Services Committee (HASC) directed the Assistant Secretary of Defense for Industrial Base Policy to deliver a report "*assessing the processing of seabed resources of polymetallic nodules domestically*".[105] This was later confirmed when the bill became Public Law in December 2023.[106]

The decision was hailed by TMC on its website in January 2024, and Barron declared in March 2024 on X that *"our interactions with DOD and Congressional officials give us confidence that those preparing the next Pentagon report understand the challenges of metals procurement and the major opportunities for nodule processing in the United States."*[107]

TMC's lobbying campaign on NDAA FY25 helped lead to DOD being directed to produce yet another study "*to assess the feasibility of improving domestic capabilities for refining polymetallic nodule-derived intermediates into high purity nickel, cobalt sulfate, and copper for defense applications*", according to a bill released by the House of Representatives in June 2024.[108,109] The initial report

February 2024
BOEM denies Impossible Metals' initial lease application for deep sea mining near American Samoa.

March 2024
The DOD determines cobalt stockpiling is currently unnecessary.

was requested by March 2024, but DOD authors have requested multiple extensions, in part to incorporate the NDAA FY25 feasibility study into the report, and now expect to deliver it to Congress by July 2025.

TMC has found most support among Republican Members of Congress. In December 2023, 31 Republican Representatives sent a letter to then Secretary of Defense Lloyd Austin, urging him "*to develop a plan to address the national security ramifications of [China's] interest and investment in seabed mining*".[110] Seventeen members of the HASC signed the letter. Among them is Michael Waltz, a former Green Beret who made millions through the sale of a defense contracting firm with offices in Afghanistan while advocating for U.S. intervention against the Taliban.[111] Waltz was appointed to the strategic position of National Security Advisor to the Executive Office of the President on 20 January 2025, before being removed from the position by President Trump a few months later and nominated to be U.S. Ambassador to the United Nations.[112]

Post from X - TMC CEO Gerard Barron appears before Congress, promoting deep sea mining as a way for the U.S. to "outcompete China" marking a pivotal shift in TMC's narrative—from green tech to geopolitics—as it seeks U.S. support and investor confidence.

March 2024

SAFE Summit, Washington D.C.—Gerard Barron pitches a U.S.-based nodule processing facility to senior policymakers, industry leaders, and retired military officers—shifting TMC's narrative toward national security.

"Forget about mining, [and] focus on refining."
- Gerard Barron

Representative Mike Turner (R.-OH), Chair of the House Committee on Intelligence, also signed the letter, along with co-sponsor Representative Elise Stefanik (R.-NY), a self-proclaimed "ultra-MAGA" voice in the Republican Party[113,114]—who was President Trump's original choice for U.S. Ambassador to the United Nations.[115] But most relevant to TMC is the support of Representative Robert J. Wittman (R.-VA), Vice-Chair of the HASC, who co-sponsored the letter. A key voice on defense in Washington, Representative Wittman receives most of his campaign funding from defense industries[116] and sits on the Energy and Mineral Resources subcommittee, which is potentially significant to legislation that may favor the deep sea mining industry. Wittman has a long record of supporting TMC's positions, including encouraging the ISA to accelerate the adoption of deep sea mining regulations in November 2023,[117,118] and urging the DOD to assess "*polymetallic nodules as a viable resource to secure critical minerals and close national security vulnerabilities*" in July 2023.[119]

In June 2024, Wittman was appointed Co-Chair of the newly created Critical Minerals Policy Working Group of the House Select Committee on the Strategic Competition Between the United States and the Chinese Communist Party. When assuming this position, he made an unambiguous declaration of his intentions: "*dominance over global supply chains for critical mineral and rare earth elements is the next stage of great power competition.*"[120]

The invitation to TMC was not long in coming. On 10 September 2024, the Wittman-led Critical Minerals Policy Working Group invited Gerard Barron to speak at a meeting on "Recycling, Domestic Recovery & Non-Traditional Sources". Before the gathered Members of Congress, Barron declared: "*I firmly believe that in order for the United States to outcompete China in the critical mineral space, we must invest in domestic capabilities to harvest and also refine seabed minerals.*"[121] Wittman's office declined to respond to questions for this report. Barron took up this framing of U.S. competition again in April 2025, when invited to a similar hearing with the House Natural Resources Committee.

TMC's public relations strategy and lobbying activities came to fruition in March 2024, when Representatives Carol Miller (R.-WV) and John Joyce (R.-PA) introduced the Responsible Use of Seafloor Resources Act of 2024 (RUSRA).[122] The bill provides unequivocal support to deep sea mining, stating that "*the collection of seafloor nodules is integral to ensuring the United States does not continue its over-dependence*" on foreign countries of concern. Data from **opensecrets.org** shows that TMC is the only corporation to have recorded lobbying activities on that bill.[123] If adopted by Congress, the RUSRA would, among other objectives, task DOD "*to provide resources for the build out of domestic nodule processing capacity to produce high purity critical minerals.*"[124] As of March 2025, the bill has been referred to competent committees and still has a long way to go before becoming a public law. Carole Miller's office did not respond to inquiries.

After sowing the seeds of a legal framework to support deep sea mining on Capitol Hill, meticulously nurtured with letters of support from prominent retired military officers and veterans, TMC has endeavored to harvest funding from the U.S. government, in particular the Pentagon.

d. The Metals Company campaigns to obtain funding from the Pentagon

Successive Democratic and Republican administrations have mandated the Pentagon to take action to secure critical minerals supply chains. In September 2023, Barron seemed enthusiastic when the Department of Energy (DOE) announced up to $150 million to advance cost effective and environmentally responsible

March 2024
TMC warns in SEC filings that ISA approval for its exploitation plan may be delayed indefinitely.

April 2024
Ret. Rear Admiral Hugh Wyman Howard III, with deep U.S. Navy and defense ties, joins the advisory board of Impossible Metals, signaling the expanding military–deep sea mining personnel pipeline.

processes to produce and refine critical minerals and materials in the United States.[125] Fifteen days after the announcement, he communicated on X about his visit to the DOE and shared a picture of his meeting with Joe Manchin, then the U.S. Senate's Chairman of the Committee on Energy and Natural Resources, one of the most conservative Democrats—and the architect of the Bipartisan Infrastructure Law which provided the funding. Barron hailed their "*chat on nodules as a rare opportunity for the U.S. to own its mineral supply chain*".[126]

But Greenpeace USA investigations have discovered that Barron didn't stop at the door of the DOE. In November 2022, TMC's U.S. subsidiary DeepGreen Resources, LLC applied for a $9 million grant from a Defense Production Act (DPA) Title III program for feasibility work on a domestic refinery for nodule-derived intermediate products.[127] Through DPA Title III, the President of the United States can issue grants, loans and loan guarantees to secure onshore production, ranging from equipment relevant to combating Covid-19 pandemics to critical minerals processing facilities or mining.

The decision on TMC's 2022 grant application is now in the hands of the Trump administration's Office of Manufacturing Capability Expansion and Investment Prioritization at the DOD. In November 2023, five Representatives from Texas wrote a letter to the Assistant Secretary of Defense for Industrial Base Policy in support of TMC's application. According to the document, the processing facility is planned to be located in Texas.[128] The letter argues that "*support for the project would represent an investment in our national security, domestic economy and production of materials to support the energy transition.*" But the DOD may also be subject to TMC lobbying activity. When asked by a freelance journalist about TMC's connections to the Pentagon, a TMC representative reckoned that, "*given the national security [context], we speak a lot to the DOD. (...) They are very well aware of the potential of [our] industry*".

However, TMC's campaign to insert deep sea mining into the national security agenda appears more speculative than substantive. There is no evidence of clear demand signal from the Pentagon, no acquisition plans for seabed-derived materials, and no formal defense mandate backing these initiatives. What TMC has found, instead, is a rhetorical strategy—an appeal to security that masks a deeper uncertainty about the viability, risks and legitimacy of deep sea mining.

e. Weaponizing the deep sea mining narrative: national security as industry strategy

TMC is not alone in its effort to build bridges between the deep sea mining industry and defense-military interests. Deep sea mining proponents are garnering support from a growing number of veterans through venture capital firms in search of funding opportunities in defense-related technology startups. An increasing number of former senior U.S. military officers, once retired, are joining the ranks of venture capital firms with a national security focus.[129] In December 2023, *The New York Times* listed at least 50 high-ranking veterans who had joined venture capital firms while still interacting with DOD and Congress.[130] Some veterans are now showing a keen interest in deep sea mining.[131]

Among them is retired Rear Admiral Hugh Wyman Howard III. In April 2024, Howard, a former U.S. Navy Seal with a dark record in Iraq,[132] joined the advisory board of Impossible Metals.[133] Howard's new role comes in addition to serving on the strategic advisory board of Performance Drone Works,[134] a drone company, Somewear Lab,[135] a defense-oriented communication entity, and U.S. Innovation Technology (USIT), a $5 billion fund that "backs early- and growth-stage technology companies with dual-use applications to the commercial sector and defense industry".[136] The fund has invested in or is closely aligned with startups advancing AI-powered

July 2024
Major insurers Zurich, Swiss Re, Hannover Re, and Vienna Insurance Group announce they will not underwrite deep sea mining activities.

July 2024
American Samoa declares a moratorium on deep sea mining in its territorial waters, citing ecological risk.

military technologies, such as the Anduril, unmanned surface vehicle trailblazer Saronic, and ShieldAI, which builds AI pilots for aircraft. Oliver Gunasekara, CEO of Impossible Metals, declined to answer questions posed by a freelance researcher about why Howard was recruited for the board.

Even more significant is the case of Tom Hennessey. In Fall 2021, Hennessey, a retired Navy Intelligence Officer, teamed up with Matthew Kibble,[137] a former banker at JP Morgan, to create DYNE Asset Management to "*allocate private capital* (...) *on 'Clean Path' initiatives*' "[138] with a view to supporting military, diplomatic and national security initiatives aimed at countering China's military and technological dominance in the Indo-Pacific space. DYNE AM quickly engaged in seafloor exploration. In December 2021, it provided NZ$ 5 million (US$ 3.09 million) to the CIC Consortium, which explores the seabed and supports the development of a mining system to obtain minerals in the Cook Islands' Exclusive Economic Zone. DYNE is providing an additional NZ$ 57.6 million (US$ 35.6 million) to the project over five years.[139]

In October 2023, DYNE AM went a step further and launched DYNE Maritime, a US$ 100 million fund to invest in dual-use technologies, including innovations in ocean exploration and monitoring.[140] DYNE Maritime, which is advised by Tim Gallaudet, a retired U.S. Navy Rear Admiral, has received funding from IronGate Capital, which invests "to support dual-use technologies that strengthen the national security of the United States".[141] IronGate Capital is chaired by another veteran, Hon. Tydal McCoy, retired Assistant Secretary of the U.S. Air Force and Treasurer of the Institute of World Politics, a

© Tim Aubry / Greenpeace

U.S. Army personnel during the 250th anniversary of the US Army parade held in Washington D.C. in 2025.

July 2024
Scientists reveal that nodules in the CCZ may be producing oxygen without sunlight, a potentially groundbreaking ecological discovery.

July 2024
The count of ISA member states supporting a deep sea mining moratorium or pause rises to 32 (France backs a full ban).

school for future national security experts. Gallaudet did not respond to inquiries from freelance journalists.

In the meantime, Graham Talbot, another advisor to DYNE Maritime, co-founded Seafloor Minerals Fund (SMF), now rebranded WetStone, a venture capital firm that vows "*to raise a big pile of money, and be the first institutional investor*" in deep sea mining, according to an insider interviewed for this report. Among its co-founders is Daina Paulikas, TMC's former "Head of Battery Metals Sustainability Studies", who co-authored the biased studies aimed at building up TMC's EV-focused narrative discussed earlier in this report.[142] Paulikas did not respond to inquiries from freelance journalists.

Both DYNE Maritime and SMF have hired former Australian Prime Minister Scott Morrison and Mike Pompeo, former U.S. Secretary of State and former Director of CIA, as strategic advisors.[143,144] These two former high officials were key architects of AUKUS, the trilateral security partnership between Australia, the UK, and the U.S., which was formally established in September 2021, only a few weeks before DYNE AM was founded. AUKUS is designed to provide Australia with a conventionally armed, nuclear powered submarine capability and to develop and provide joint advanced military capabilities, including subsea and seabed warfare capabilities.[145] DYNE AM did not respond to inquiries from freelance journalists.

2.2. But defense is not driving demand for deep sea mining

Taken all together, the global demand of the defense industry for the metals found in polymetallic nodules—such as cobalt, nickel, copper, and manganese—is likely to represent only a tiny fraction of overall global consumption. "*In 2023, the French defense industry accounted for 1% of the country's metal requirements*", points out Raphael Danino-Perraud, Associate Research Fellow at the French Institute of International Relations (IFRI) within the Energy and Climate Center, and an expert in mineral resources and their application to the military sector. "*In the United States, this percentage could reach a maximum of 3 to 5% of domestic demand.*"*

Danino-Perraud contends that existing global reserves and resources of these critical metals are more than sufficient to meet the needs of the U.S. defense sector, even in scenarios of geopolitical disruption. He argues that, even if another state were to impose punitive trade measures—such as tariffs or export bans on rare earths or strategic minerals—"*the U.S. would be in a position to secure alternative supplies within 18 to 36 months and therefore, there is absolutely no need to mine the seabed for securing further U.S. defense needs for critical minerals.*" These alternatives include allied and domestic sources, as well as rapidly scaling investments in processing capacity under the Defense Production Act and allied agreements like the U.S.-EU Critical Minerals Accord.[146,147]

Jack Lifton, Executive Director of the Critical Minerals Institute, confirmed this view with independent researchers contributing to this report: "*The U.S. defense demand stands for a tiny percentage of our domestic consumption of critical metals. And to be honest, the U.S. defense is not a big user of anything*". Lifton, who was previously involved in the board of Oceans Minerals LLC, a deepwater critical metals exploration and development company which holds exploration licenses in the Cook Islands EEZ, is adamant: "*The U.S. Army is no longer interested in deep sea mines.*" Contrary to the impression that deep sea miners seek to convey, Lifton

* The quotes in these paragraphs were made to an independent researcher researching this report.

August 2024
Brazilian oceanographer Leticia Carvalho is elected ISA Secretary General, replacing longtime incumbent Michael Lodge.

August 2024
Electra secures a $20 million DOD grant to complete its cobalt sulfate refinery in Ontario.

CRITICAL MINERALS FOR MILITARY APPLICATIONS

Deep sea mining is being framed as essential for defense—but most military-critical minerals don't come from the deep sea.

Only a small fraction of military-relevant minerals can be mined in volume from the deep sea nodules. The Department of Defense has not requested these minerals—and most needs are met through existing stockpiles, allies, and recycling.

Source: Benedetta Girardi, Irina Patrahau, Giovanni Cisco and Michel Rademaker, Strategic raw materials for defence: Mapping European industry needs. The Hague Centre for Strategic Studies, January 2023.

concludes that: "*Given what the defense industry and the DOD and the different contractors are doing in terms of securing metals from elsewhere, friendshoring, reshoring, recycling, there is no need to mine the seabed for cobalt or nickel or rare earths.*"

Framing deep sea mining as a national security necessity overlooks this reality. The U.S. National Defense Stockpile was created as a buffer against temporary supply shocks—not to underwrite speculative mining ventures. While the recent Executive Order in-

September 2024
Freeport announces plans to recover 800 million pounds of copper annually from U.S. mine tailings by 2027.

November 2024
The DOE approves a $475 million loan to Li-Cycle to construct a battery materials facility in New York.

Photo credit: Defense Logistics Agency / U.S. Department of Defense, public domain

Critical minerals stored in the U.S. National Defense Stockpile, managed by the Defense Logistics Agency—a reserve for emergencies, not ongoing production.

structs the Department of Defense to examine whether seabed-derived materials might be stored or included in offtake agreements, this directive reflects political interest, not a proven military need. Defense-focused demand remains limited and stable. The push for seabed extraction is coming from commercial actors, private investors, and defense hawk narratives, rather than grounded military assessments of material shortfalls.

a. Available evidence indicates military demand for deep sea mined minerals is low

Although mineral-intensive, the defense industry is unlikely to become a significant demand driver for the deep sea mining industry. The omnipresence of critical metals in today's weapons and defense technologies should be considered in relation to the total volume used across all economic sectors. As a proportion of this global demand, the military demand for critical metals remains very low in comparison with civilian demand.

For certain alloys used in the defense industry (e.g. titanium), shortened supply chains with few layers of subcontractors make it relatively easy to calculate the U.S. and global military needs. But due to supply chain complexities, it is very hard to find reliable estimates of the military demand for other metals—making over-simplified corporate narratives of scarcity misleading and unsubstantiated.

Three of the potentially profitable metals contained in polymetallic nodules are manganese, nickel, and cobalt. They respectively account for 29%, 1.4%, and 0.25% of the metals contained in nodules from the CCZ,[148] and they do have military applications:

- Structural materials for ships, aircraft, and armored vehicles (nickel, manganese).
- Battery chemistries for military-grade energy storage and electric mobility (cobalt, nickel).

November 2024
TMC reaffirms its plan to file for exploitation under its NORI subsidiary by June 27, 2025.

December 2024
The NDAA instructs the DOD to evaluate the feasibility of domestic nodule processing.

- Electronics and sensors for communications, radar, and targeting systems (copper, cobalt).
- Alloys and coatings for heat resistance and strength under extreme conditions.

However, the scale of this military use is relatively modest compared to global civilian demand—dwarfed by the commercial manufacturing sector.[149] Cobalt, for instance is important for the superalloys used in jet engines, yet military uses represent less than 10% of global demand.[150] Applications like electric vehicles, renewable energy infrastructure, steel production, and consumer electronics drive the overwhelming majority of global mineral demand.

Manganese was the original economic justification for the development of the deep sea mining industry. In the early 1970s, when demand for manganese was near its height, manganese made up over 70% of the value of a polymetallic nodule. The value of manganese relative to other critical minerals has since declined, largely due to changes in steel manufacturing, which accounts for approximately 90% of manganese use.[151]

Manganese is the only major product of deep sea mining for which the U.S. is wholly dependent on imports. Manganese ore is imported principally from Gabon (62%), South Africa (24%), and Mexico (13%).[152]

Manganese is a curious case, as it makes up a large proportion of the recoverable minerals from a polymetallic nodule mine but is in much lower demand compared with cobalt and nickel. Even in the 1970s, forecasters noted that manganese prices were highly volatile and that a relatively modest commercial deep sea mining operation producing 1 million tons of nodules per year (about a third the annual production volume that the ISA predicts from the first commercial mining leases) would be ten times the annual consumption of manganese in the U.S. in 1970.[153]

This places economic projections on the value of manganese from the deep sea on tenuous footing. A substantial deep sea mining development could nearly double the global supply of manganese in its first year, resulting in an immediate oversupply of the metal. Subsequent deep sea mining projects would likely result in significant reductions in the value of manganese and the mining operation as a whole. For comparison, in 2023, a 10% nickel production surplus resulted in a 21% collapse in nickel prices.[154]

Nearly all defense needs for manganese are related to steel production. The U.S. maintains a stockpile of 322,000 tons of manganese ore in Wenden, Arizona.[155] Manganese recycling is negligible.

Nickel is a shiny, silver metal that is essential to a variety of industries, but 85% of domestic nickel consumption goes towards the production of stainless steel and other alloys. The U.S. consumed approximately 190,000 tons of nickel in 2024.[156] Nickel is used in military applications for armor and aircraft alloys, but, like cobalt, its most pressing use is in high-capacity batteries for electric vehicles and energy storage.

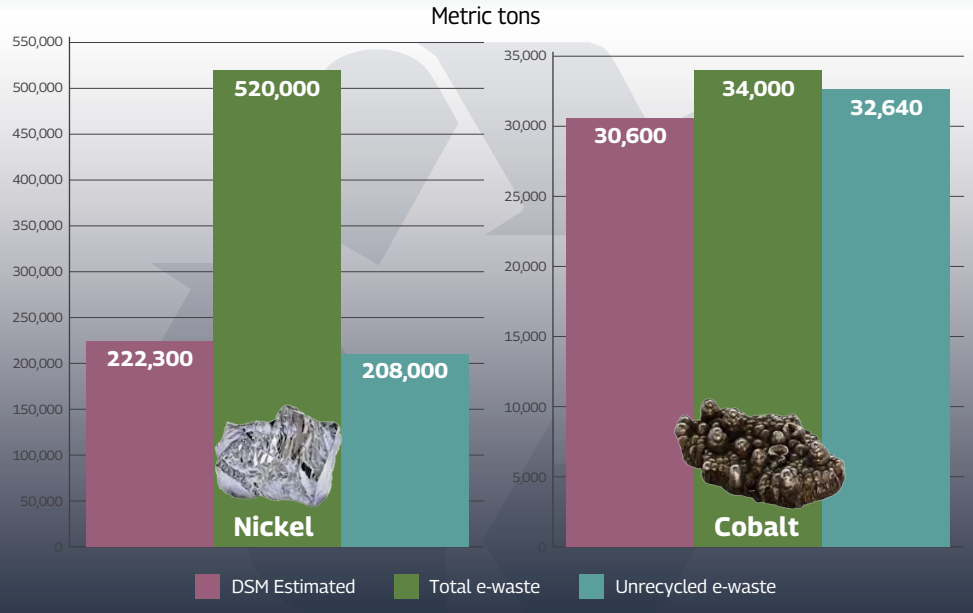
The U.S. imports nickel from Canada (46%), Norway (9%), Finland (7%), and Russia, (7%). Worldwide nickel production was 3.3 million tons in 2022.[157] Over half of that production was from Indonesia, whose market dominance is projected to grow throughout the decade. Nearly half of U.S. nickel imports come from Canada, with the Department of Defense awarding significant funding to Canadian nickel producers to increase production.[158] The Russian Federation is the world's third largest nickel producer, accounting for 8% of global production and Russia's ongoing invasion of Ukraine has led to major volatility in the metal commodities market.[159] The U.S. produces roughly 17,000 tons of nickel from a single mine in Michigan. That nickel is exported to Canada for processing.

December 2024
Norway suspends Deep sea mining development amid political backlash.

January 2025
TMC voluntarily relinquishes its exploration contract with Kiribati, giving up one-third of its CCZ claim.

THE CASE FOR CIRCULARITY: E-WASTE OVERSHADOWS DEEP-SEA MINING POTENTIAL

Cobalt and nickel — the primary market drivers of deep-sea mining — are already available in far greater volumes from global e-waste. Deep-sea mining is unnecessary and inefficient by comparison.



Data sources: DSM industry estimates, Global E-Waste Monitor (2024), Circularity Gap Report

As with cobalt, numbers for pure defense spending are not available; however, when President Biden used the Defense Production Act to increase production of nickel (as well as lithium, cobalt, graphite, and manganese), it was explicitly to bolster the supply chain for large capacity batteries rather than for defense.[160] The U.S. does not maintain a nickel stockpile.

While the cost of nickel can be extremely volatile, it does not have the same supply chain disruption risks as cobalt.[161] Nickel is readily recycled and over 50% of U.S. nickel consumption in 2023 was from recycled nickel.[162]

Cobalt is a grey lustrous metal commonly extracted in conjunction with copper and nickel. The U.S. used approximately 6,400 tons of cobalt in 2024, representing 2.8% of world cobalt production in 2023 (230,000 tons). The U.S. share of world cobalt consumption is therefore still very small, considering the country's overall civil and military needs. Of that, 50% was used in superalloys, primarily for aircraft engines; 25% was used in chemical applications; 15% in other metallic applications; and 10% in carbides for abrasives and cutting tools.[163] Cobalt has numerous military applications, including for temperature-resistant alloys for jet engines, magnets for stealth technology, electronic warfare, as well as alloys for munitions.[164] However, globally, lithium ion batteries are the leading use of cobalt; according to the Cobalt Institute, "*battery applications account for 73% of cobalt demand and are the dominant driver of market growth.*"[165]

January 2025
A coalition of contractors threatens legal action if the ISA fails to adopt a mining code in 2025. Legal experts dismiss the threat as unfounded.

February 2025
Impossible Metals delays its 2026 CCZ test with BGR, citing unreadiness.

The U.S. imports cobalt from Norway (25%), Canada (15%), Finland (13%), and Japan (12%) and produces some cobalt domestically. There are nickel-copper mines in Michigan and Missouri, both of which produce cobalt as a secondary product. The U.S. attempted to commission a mine in Idaho, which would be only the second mine in the world whose primary production was cobalt, but production was suspended due to the declining price of cobalt. The U.S. has approximately 69,000 tons of cobalt reserves and has identified approximately 1 million tons of potential cobalt deposits within the country.[166]

While numbers for pure defense needs are not generally available, and much of the strategic need for cobalt is wrapped up in lithium-ion batteries used for both civilian and military purposes, at the peak of the Cold War, the U.S. maintained a defense stockpile of 13,000 tons. That number has shrunk to an estimated 333 tons.[167] Recycling accounted for approximately 25% of cobalt consumption in 2023.

Although the global rise in military spending may contribute to increased demand for critical minerals in general, including cobalt, sales of electric vehicles are what is driving global demand. Accordingly, the rapid shift to Lithium Iron Phosphate and sodium-ion battery chemistries is likely to reduce the EV industry's demand for cobalt. In an interview with Reuters, Defense Logistics Agency (DLA) spokesperson Joe Yoswa said: "*DLA ... conducts critical material supply chain assessments biennially to determine NDS (National Defense Stockpiles) requirements. Cobalt is not currently presenting as a vulnerability requiring stockpiling.*"[168]

Of the dominant critical minerals potentially produced by deep sea mining, cobalt is the most vulnerable to disruption, economic and trade volatility, and supply risk.[169] Even given the volatility of the cobalt supply chain, the U.S. possesses internal production capacity as well as access through long term allies.


Photo Credit: Air Force Staff Sgt. Eugene Oliver/DOD, public domain

DoD personnel dismantle components of a decommissioned submarine at Puget Sound Naval Shipyard, part of the military's large-scale recycling of strategic materials.

b. Military needs are already addressed by alternative supply strategies

The notion that deep sea mining is necessary to ensure military readiness or strategic autonomy overlooks the robust and ongoing investments in sustainable supply solutions. Governments are already working to diversify and secure mineral inputs through:

- Domestic and allied sourcing agreements (e.g. U.S.-Australia and EU-Canada critical minerals partnerships).
- Recycling and circular economy approaches, especially for cobalt and nickel from spent batteries.
- Strategic stockpiling programs, such as the U.S. National Defense Stockpile managed by the Department of Defense.
- Minerals Security Partnership (MSP) involving G7 and allied countries to coordinate non-deep sea mining mineral security.

These strategies are far more aligned with long-term security priorities than opening an ecologically fragile, financially risky, and legally contested frontier on the seafloor.

March 2025
TMC is named in multiple investor class action lawsuits alleging misreporting, insider deals, and financial misconduct.

March 2025
TMC declares its intention to bypass the ISA by seeking a U.S. mining license under the dormant DSHMRA statute.

c. National security is being manipulated as a justification for deep sea mining

Proponents of deep sea mining are increasingly invoking national security rhetoric to fast-track commercial licensing, particularly in U.S. policy debates.[170] But this narrative distorts the actual scale and urgency of military mineral demands, and ignores more pragmatic, less destructive paths already being pursued.

Instead of legitimizing an industry with immense environmental risks and uncertain returns, governments should prioritize transparency, recycling, supply chain diplomacy, and demand reduction in defense procurement and broader industrial policy.

The U.S. has adopted multiple policies in recent years to bolster domestic critical mineral production and diversify sourcing. In what may be "*one of the biggest economic development loan programs in United States history*",[171] the August 2022 Inflation Reduction Act increased tenfold the capacity of the Department of Energy (DOE) Loans Program Office to loan funds to companies, to $400 billion for clean energy projects.[172] In addition, the Bipartisan Infrastructure Law, passed in November 2021, extended the capacity of DOE to issue loan guarantees to first-of-a-kind commercial-scale projects that increase the domestic supply of critical minerals.[173]

Ordered by President Joe Biden "*to undertake a comprehensive review of critical U.S. supply chains to identify risks, address vulnerabilities and develop a strategy to promote resilience*",[174] the 100-Day Supply Chain Review Report, released in June 2021,[175] recommended that the President should make use of the Defense Production Act (DPA), a Korean War-era policy instrument designed to strengthen domestic industrial base capabilities. President Trump had already invoked the DPA in 2019, to ask the Pentagon to secure rare earth supplies and protect the production capacity of permanent magnets used in precision-guided missiles, smart bombs and military jets.[176]

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March 2025
Loke Marine Minerals files for bankruptcy, just two years after acquiring Lockheed's deep sea mining assets and aspiring to lead the sector.

April 2025
Impossible Metals submits a mineral lease sale request to BOEM for federal waters offshore American Samoa.

However, as vigorous as the U.S. mineral sovereignty policy for securing critical minerals supplies for its armed forces may be, available evidence and our investigation indicates that the defense industry's actual demand for these resources is likely to remain low, making military applications unlikely to become a demand driver for the deep sea mining industry. That means the artificial bubble of political support the deep sea mining industry is counting on for its future could burst at any time.

In short, the defense sector's limited demand, combined with the availability of reliable allied supply chains and strategic stockpiling measures, undercuts the argument that the U.S. must pursue deep sea mining to ensure military readiness. There is currently no credible evidence that deep sea mining is required to meet the defense sector's critical mineral needs—especially when considered against the potential environmental and geopolitical costs of initiating industrial mining in the deep ocean.

However, TMC is always ready to seize any opportunity, as evidenced by its immediate application for an exploitation license following President Trump's April 2025 Executive Order. "*We haven't really had any conversations with defense companies to date. And obviously, particularly on things like cobalt and other metals, the use of these in defense applications is quite significant. So, you know, of course, there will be interest*," said Rory Usher, Communication Manager of TMC, in an interview with a freelance journalist. But the scale of the military demand for the metals targeted by deep sea mining does not appear to match TMC's self-serving narrative. And no one but TMC is acting like procuring deep sea mined minerals is an emergency, as demonstrated most clearly by the DOD's recent decision that there is no need to stockpile cobalt.

Despite persistent efforts by would-be deep sea miners to present their industry as demand-driven for defense production and vital for national security, our investigation reveals that it remains a flailing, supply-driven industry that has repeatedly failed to take off. The idea of using deep sea minerals to serve defense purposes or boost national security is nothing but a tall tale devised and deployed by the deep sea mining industry in an attempt to seize the geopolitical zeitgeist to attract a new market. In reality—and despite the political support currently being shown by the Trump administration—the market may never support deep sea mining because of its high operating costs, huge environmental risks, and legal challenges.


© Tim Aubry / Greenpeace

April 2025
President Trump signs an Executive Order titled "Unleashing America's Offshore Critical Minerals and Resources", directing federal agencies to expedite permits for deep sea mining in both U.S. and international waters.

April 2025
The Metals Company, via its U.S. subsidiary, applies to NOAA for commercial mining rights in the CCZ—an attempt to bypass ISA oversight by invoking the long dormant U.S. DSHMRA under Trump's Executive Order.

© Blue Planet Archive / Steven Kovacs

SECTION 3 UNDERMINING THE GLOBAL ORDER: DEEP SEA MINING IS EXACERBATING TENSIONS

3.1. The national security and defense narrative heightens geopolitical tensions and violates the "peaceful purposes" intent of UNCLOS

The international seabed—legally recognized under the UN Convention on the Law of the Sea (UNCLOS) as the "*common heritage of mankind*"—is intended to be governed cooperatively, for the benefit of all, and used exclusively for peaceful purposes. Article 141 of UNCLOS affirms that "*the Area shall be open to use exclusively for peaceful purposes by all States*." But the political dynamics surrounding deep sea mining today point toward rising contestation and even militarization, not collaboration. This threat has been further inflamed by both the TMC announcement that it intends to bypass the ISA and President Trump's Executive Order of 24 April 2025, as outlined in the Introduction to this report.

a. UNCLOS and the United States: from delicate balancing act to high risk gamble

The U.S. position regarding UNCLOS reflects a persistent balancing act—between ideological resistance to binding international legal frameworks, the support of influential former and current officials and military leaders who recognize the treaty's strategic value to the U.S., and growing anxiety in the Pacific.

The U.S. played a key role in the early development of the deep sea mining industry, through initial financing, material support to US-based mining companies, and ongoing participation in the development of the UNCLOS, particularly Part XI. However, President

Reagan opposed the adoption of the Convention,[177] opting instead to continue negotiations on Part XI of the treaty while bringing federal law into customary compliance with UNCLOS. Although the U.S. did ultimately sign on to the 1994 Agreement relating to the Implementation of Part XI of UNCLOS following amendments to provisions in Part XI, Congress declined to ratify the treaty, leaving the U.S. in a unique situation as the largest economy that is not a member of the ISA.

While joining UNCLOS would grant the United States more influence at the ISA, UNCLOS ratification remains politically unlikely. It conflicts with long-standing opposition to international legal constraints and the Trump administration's broader rejection of multilateral agreements, starkly evidenced by his decision to withdraw the U.S. from the Paris Agreement on his very first day in office.[178]

Politics, not policy, continues to keep ratification off the table. Some advocates of the U.S. ratifying UNCLOS argue that it would allow Washington to have a vote at the ISA. But rather than taking a seat at the negotiation table, President Trump's 24 April 2025 Executive Order on deep sea mining[179] suggests a deliberate turn away from multilateral governance. The order directs federal agencies to support domestic processing and stockpiling of polymetallic nodules and sets the stage for the U.S. to unilaterally approve deep sea mining in international waters through the U.S. Deep Seabed Hard Mineral Resources Act (DSHMRA)—entirely outside the UNCLOS framework.

Regardless of the U.S. ratification status, when UNCLOS entered into force in 1994, the exploration licenses in the Clarion-Clipperton Zone (CCZ) issued through the DSHMRA lost their international standing, as they are not recognized under the ISA regime established by UNCLOS. While these licenses remain valid under U.S. law, their legitimacy under international law is limited, and overlapping ISA designations underscore their lack of enforceability beyond U.S. jurisdiction. Under the DSHMRA, exploration licenses permit U.S. entities to assess the location, content, and environmental context of deep sea mineral resources, but not to commercially extract them. To do so would require a separate exploitation license—one that NOAA has never issued. TMC's application for an exploitation license in April 2025, therefore marks an unprecedented test of the DSHMRA's long dormant provisions.

TMC admits how risky and difficult their new strategy is in its latest financial filing of 12 May 2025. TMC states that applying to the U.S. for access to the international seabed, "*may cause additional regulatory and political tensions*" and "*may result in our need to engage in costly and time-consuming litigation*". The company reveals it is well-aware that the 169 governments + the European Union who are parties to the UNCLOS "*are under a legal obligation, under UNCLOS, not to recognize any commercial recovery permit issued to us under [unilateral US regulations]*" and that "*many UNCLOS parties and the ISA are likely to regard such a permit as a violation of international law*". The company reveals to investors that this "*could affect international perceptions of the project and could have implications for logistics, processing, and market access in UNCLOS parties for seabed minerals extracted under a U.S. license and for downstream products containing them, or for partnerships involving foreign entities, and could also result in actions, pursuant to UNCLOS, against TMC under the national laws of UNCLOS parties, any or all of which could have a material adverse effect on our business, financial condition, liquidity, results of operations and prospects*." [180]

Pursuing deep sea mining outside of the UNCLOS framework would create serious geopolitical risks for the U.S. and other countries. UNCLOS establishes a package of rights which all states, including the U.S., enjoy. Acting unilaterally on deep sea mining would not only lead to legal challenges but also weaken the ability of the U.S. to demand compliance from other states on matters such as illegal fishing, military navigation, and the enforcement of extended continental shelf claims. Vessels participating in unilateral deep sea mining could also face port access restrictions and/or trade sanctions by UNCLOS parties.

Most importantly, bypassing UNCLOS would weaken legal norms, set a dangerous precedent for exploiting global commons, and fuel great power tensions.

b. The Pacific as a zone of intensifying competition

Dozens of countries—including France, Germany, the UK, and Canada—have already supported a moratorium or precautionary pause on the start of deep sea mining.[181] The U.S., meanwhile, has not ratified UNCLOS and has opposed taking a precautionary position in reference to the advancement of deep sea mining, despite ongoing participation in ISA negotiations as an Observer State.

Meanwhile, the debate over deep sea mining continues at the ISA, intensifying the global struggle over rule-setting for seabed exploitation. *"The stage is now set for a pitched diplomatic battle over the rules and regulations that will govern activity in this vast, unexplored frontier",* Isaac B. Kardon and Sarah Camacho, from Carnegie Endowment for International Peace, contend.[182] Several European powers, Russia, and India all hold exploration licenses with the ISA and are actively involved in negotiating the Mining Code. China holds more than anyone else, with 5 of the 31 ISA exploration contracts. Without the U.S. at the table, *"China is the only heavyweight in multilateral negotiations to set new rules for extraction of deep seabed minerals".*

But this diplomatic distance is not stopping Washington from keeping an eye on moves taken by other states in the deep sea mining space. A multifaceted competition for influence in the Pacific is clearly underway, with deep sea mining increasingly framed by some as part of broader infrastructure, security, or development partnerships.

Many Pacific Peoples see it differently. For many, deep sea mining does not represent progress but just the latest manifestation of a centuries-old pattern of colonialism and imperialism—one that has extracted resources, displaced communities, and dismissed Indigenous stewardship in the name of global development.

Among Pacific Island nations—who steward vast swaths of ocean space under national jurisdiction and hold a moral stake in international seabed governance—debates over seabed mining remain deeply complex. Many governments are weighing the industry's promises of economic development against the risks of geopolitical entanglement, and cultural and environmental harm. As Satyendra Prasad and Emily Hardy of the Carnegie Endowment observe: *"A concern for many Pacific states is that deep sea mining in the Blue Pacific will become a new theater of resource conflict as high-income states descend on identified clusters of polymetallic nodules."*[183]

© Martin Katz / Greenpeace

Two Māori activists peacefully confronted UK Royal Research Ship James Cook in the East Pacific waters as it returned from a seven-week long expedition to a section of the Pacific Ocean targeted for deep sea mining. One held the Māori flag and the other a flag reading "Don't Mine the Moana" (don't mine in the oceans).

These tensions are not only external—they are also emerging *within* the Pacific itself. Countries such as Tuvalu, Vanuatu, and the Federated States of Micronesia have joined Fiji, Samoa, Palau in calling for a moratorium on deep sea mining. On the other side, Nauru, Tonga, and Cook Islands have all entered into partnerships to pursue deep sea mining.

TMC has already struck partnerships with the Pacific States of Nauru and Tonga to explore for deep sea metals, although these are now in question following TMC's turn to the U.S.. Kiribati only recently severed a similar relationship with TMC, and is now exploring other partnership possibilities for deep sea mining.[184] But while the company dangles a promotional vision of double- and triple-digit investor returns, concerns are growing within Pacific Island societies about the risks to marine ecosystems, the cultural consequences of seabed exploration, and the risks of financial liabilities. Civil society leaders, ocean experts, and Indigenous stewards across the region are voicing alarm about the opacity of decision-making and the pace of industry advancement.

As Kahoʻohalahala, Native Hawaiian elder with the Maui Nui Makai Network and ardent ocean advocate, conveyed to Greenpeace USA: "*We are not here to be a test bed for the world's extractive industries. The ocean is not a frontier to conquer, but a relative to protect.*" His words echo a deep cultural worldview that sees the ocean not as a resource, but as kin—integral to identity, history, and responsibility.

From Washington's perspective, China is viewed as an increasingly assertive actor in the Pacific region—and perceived as actively expanding its influence across the Global South. In this geopolitical framing, deep sea mining is recast not as an ecological or cultural question, but as a competitive variable in securing access to critical infrastructure, supply chains, and alignment with emerging economies.

"We can talk about an ongoing exploration war", said Sandor Mulsow, former Head of the office of resources at the ISA, in an interview with freelance journalists. Through the D.C. security lens, China's growing diplomatic and economic engagement in the Pacific—particularly in island nations—is viewed as part of a broader challenge to the post-WWII strategic order in the region. Analysts point to examples such as China's 2018 outreach to Vanuatu regarding a potential military presence,[185] and its 2019 diplomatic breakthrough with the Solomon Islands, which saw a bilateral security agreement signed in 2022 allowing for the deployment of Chinese law enforcement and military personnel[186]—raising concerns in some quarters about the long-term implications for regional balance.

This is all symptomatic of growing global geopolitical tensions for the control of seabed infrastructure and resources that is leading towards the militarization of the deep.[187] As a recent article published by the Institut Polytechnique de Paris notes, "*Underwater resources are seen as a new front for asserting sovereignty*" and "*The seabed is emerging as a new geopolitical arena, with its own rationales and fault lines.*"[188]

Deep sea mining is a geopolitically risky business. The prospect of opening up a new resource frontier is already creating and exacerbating tensions. These tensions will inevitably be heightened if deep sea mining is allowed to actually commence, whether it is pursued unilaterally or in accordance with an agreed ISA Mining Code.

Indigenous Hawaiians hold a rally in Honolulu letting the deep sea mining ship, the Hidden Gem, know that the ship and deep sea mining are not welcome in Hawai`i,

3.2. Militarizing resources, socializing losses, privatizing profits: mining the seabed could violate UNCLOS

a. Deep sea mining and the weaponization of the deep sea

The growing jockeying for influence and access signals that the deep seabed is at risk of becoming a new theater of geopolitical contest. While there is no clear evidence that deep sea mining is currently driven by national defense requirements, nor that military procurement systems are shaping the market, there is growing concern among experts that deep sea minerals—especially if sourced through unilateral frameworks like the U.S. DSHMRA—could end up in defense supply chains by default.

The possibility that minerals extracted from the international seabed could be funneled—either deliberately or inadvertently—into military supply chains would further erode the peaceful intent of UNCLOS Article 141, that *"the Area shall be open to use exclusively for peaceful purposes by all States"*. Once deep sea mined minerals enter global supply chains, it will be very difficult to prevent them being incorporated into military applications through defense contracting and manufacturing.

The potential militarization of deep sea-sourced minerals, even unintentionally, would contradict both the spirit and the letter of UNCLOS. This raises serious legal and ethical questions and should be a matter of urgent concern for all governments.

b. From common heritage to corporate asset: how corporations are claiming the seabed

Alongside its commitment to peace, UNCLOS declares the international seabed to be the "common heritage of humankind", meant to benefit all nations. But in practice, deep sea mining is advancing along very different lines. Private companies like TMC now control vast swaths of the international seabed, including areas originally reserved for developing countries. Through legal loopholes and sponsorships by small island states, these corporations have secured prime territory—undermining both the equity and intent of the UNCLOS framework.

President Trump's April 2025 Executive Order further tilts the balance, framing seabed mining as a national security imperative and positioning U.S. corporations as instruments of geopolitical power. Under this narrative, the seabed is no longer a shared global resource—it is a strategic asset to be exploited in the name of defense. But war-making and the security priorities of wealthy nations are not the shared benefits UNCLOS envisioned. What's unfolding is not equitable benefit-sharing, but a global resource grab. One where the Global North profits, the deep sea suffers, and the world's poorest nations are left with the consequences of corporate greed.

These stark asymmetries have alerted the European Justice Foundation. In a recent analysis for the UK's Foreign Affairs Committee's inquiry on Critical Raw Minerals, the London-based NGO flagged *"a significant concern from a justice perspective [on] how companies based in the Global North have secured access to areas reserved for developing countries. [...] Given the privileges awarded to developing states, it should be scrutinized whether such partnerships do not undermine the principle of the common heritage of mankind and the objective to realize benefits for mankind as a whole."*[189]

3.3. A legal minefield: unilateral deep sea mining would face serious litigation challenges

Any licensing of deep sea mining through the U.S. Deep Seabed Hard Mineral Resources Act (DSHMRA) would be expected to face several significant legal challenges—both domestically and internationally. These challenges will likely raise questions about the legitimacy, enforceability, and geopolitical consequences of issuing commercial licenses outside of the UNCLOS framework.

Although it is not a party to UNCLOS, the U.S. recognizes most of its provisions as customary international law. Article 137 stipulates that "*no State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources*." Only the ISA has the authority to grant rights to explore and exploit resources in "the Area" (i.e., the seabed beyond national jurisdiction).

The U.S. cannot declare itself a "persistent objector" in relation to the UNCLOS deep seabed regime as it has not persistently objected. On the contrary, as a signatory to the UNCLOS 1994 Agreement, the U.S. is required to not take actions that would defeat the object and purpose of the Agreement, which unilaterally authorizing deep sea mining in the Area would certainly qualify as. In addition, the U.S. has engaged with ISA as an observer since 1998, has regularly attended meetings of both the Council and the Assembly, and contributed substantively to debates. As ISA Secretary-General Leticia Carvalho states: "*Accordingly, exploration and exploitation activities in the Area must be carried out under the Authority's control, that is, under a contract with the Authority and in accordance with the rules, regulations, and procedures it establishes; and no State has the right to unilaterally exploit the mineral resources of the Area outside the legal framework established by UNCLOS. It is common understanding that this prohibition is binding on all States, including those that have not ratified UNCLOS.*"[190]

By granting permits for U.S. companies to exploit resources in the Area, as it sets out to do in the 24 April 2025 Executive Order, the U.S. would be asserting unilateral jurisdiction over international seabed resources—contradicting international law and undermining the ISA's exclusive mandate. This creates legal uncertainty for companies operating under U.S. licenses—other states may be required under UNCLOS to not recognize their claims, and any mining could become subject to diplomatic protest or litigation. It also weakens the international legitimacy of DSHMRA licenses and exposes U.S.-backed mining operations to possible sanctions from UNCLOS member states.

The International Seabed Authority is the institution designated by UNCLOS to regulate any deep sea mining activities on the international seabed. It is unprecedented for a nation to take this on unilaterally.

Lockheed Martin's longstanding DSHMRA licenses (USA-1 and USA-4) have never moved past the exploration phase. Lockheed itself has stated that "*securing internationally-recognized status for USA-1 and USA-4 remain critical prerequisites to any decision to proceed with efforts to complete Phase 1 of the Exploration Plan*".[191] This underscores industry skepticism about the legal security of operating under DSHMRA on its own and highlights the absence of operational precedent. Any new commercial activity under DSHMRA may face similar investor hesitation, and could even prompt litigation if expectations are not met. Investors could sue if companies overstate the legal certainty or viability of DSHMRA-based licenses. In addition, if U.S.-licensed mining operations interfere with ISA-licensed areas or environmental protections, other states or contractors could initiate diplomatic or legal action.

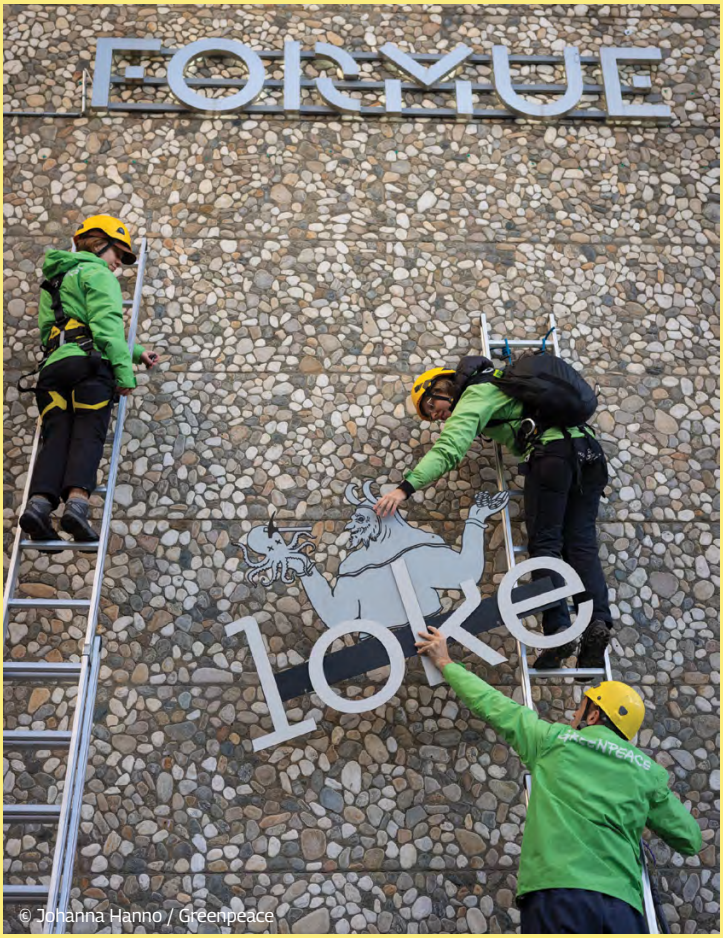
Lockheed, Kongsberg, and Loke: A cautionary tale

Major defense contractors like Lockheed Martin and Kongsberg have been involved in deep sea mining since its inception, but their presence reflects technological alignment more than strategic necessity. From subsea robotics to surveillance systems, they offered capabilities—not demand.

Despite the rhetoric of TMC and renewed political attention under the Trump administration, key defense industry players appear to have stepped back from deep sea mining. Lockheed Martin, which holds the only remaining active U.S. exploration licenses under the DSHMRA (USA-1 and USA-4), has never conducted any at-sea exploration activities under those claims. According to a 2022 notice from the NOAA, Lockheed's license extension requests included no proposals for in-water operations. The company cited unfavorable market conditions and the lack of international recognition of U.S. deep sea mining licenses as reasons for delaying further activity.[192] NOAA has also made clear that any at-sea operations would require prior written authorization and additional environmental review—none of which Lockheed has sought.[193] It costs Lockheed nothing to renew these leases, while allowing the U.S. to maintain an ongoing political stake in the development of the CCZ. As Walter Sognnes, former CEO of Loke Marine Minerals (now bankrupt, see below), reflected when interviewed by a freelance journalist: "*Think about it as a lottery ticket that you renew every five years. You get it for free, but you never know when the lottery is happening. Why should you not take that ticket?*"

After nearly five decades of investment in the development of deep sea mining, Lockheed Martin sold its remaining international assets in early 2023, including the ISA-issued exploration leases held through its UK Seabed Resources subsidiary, to Norwegian Loke Marine Minerals.

Deep sea mining has attracted a swirl of opportunistic investors—from retired military officials to speculative venture financiers—drawn by the hype around critical minerals. Into this space stepped TMC CEO Gerard Barron, not as a defense visionary, but as its marketer-in-chief. Flagship partnerships have crumbled. Kongsberg, Norway's state-owned defense and aerospace firm, became a cornerstone investor in Loke Marine Minerals in 2023—just before Loke acquired seabed assets from Lockheed Martin and became the largest holder of licenses in the CCZ. Less than two years later, Loke went bankrupt. If Kongsberg's entry signaled optimism about deep sea mining's potential, its withdrawal now sends an even clearer warning about the industry's viability.



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Greenpeace Nordic activists launched a 2024 protest action against Loke Marine Minerals, a Norwegian company that wanted to start deep sea mining in the Arctic prior to their bankruptcy.

3.4. A mining code is the wrong answer: preventing a race to the bottom

Over the last decade, the disruption caused to the multilateral system by a small private company like TMC has been shocking. Its reckless attempts to accelerate the start of commercial deep sea mining activities have caused immense tension across the international community. These attempts did not start with their recent pursuit of a license to mine the international seabed under US legislation, but were preceded by the notorious triggering of the 2-year rule in July 2021.*

The 2-year rule was triggered by Nauru, the sponsoring state of Nauru Ocean Resources Inc. (NORI), a fully owned subsidiary of TMC.[194] This was done during the COVID pandemic, at a time when many state delegations struggled to attend to their obligations under different conventions, and effectively held a gun to the ISA Council's head. As a result, the ISA started to convene three Council sessions a year, spent hours in discussions and intersessional meetings debating how to meet the 2-year deadline and trying to sort out the important differences in interpretation of UNCLOS provisions related to this rule. The political and technical investment as well as the economic cost of flying delegations from 36 Council members, as well as observers, interpretation services, analyzing and suggesting text proposals,[195] should not be forgotten.

All of this extra burden should not be understated. It happened purely to serve the interests of one single company, and under the unsupported premise, back then, that deep sea mining was essential to provide the minerals for the green transition.

Even though the international community tried in good faith to make accelerated progress on the negotiations of the Mining Code, the reality is that it is a very complex set of regulations, dealing with issues for which there are a wide range of views. ISA member states have been negotiating the details of a proposed Mining Code to regulate deep sea mining for over a decade. Still, many regulatory issues remain unresolved, with ISA parties holding different positions in key aspects of the regulations, rules and procedures, standards and guidelines.[196]

As we've seen through this report, and after deeply impacting the pace of negotiations in Kingston, The Metals Company then shifted gears and caused, yet again, even greater tension to multilateral relations with their application to mine the international seabed under U.S. national legislation. Over the last 10 years they have been trying different narratives and legal avenues. This lack of consistency quite plainly shows that their focus is not on the global public good, but on investment returns, by any means necessary: something at odds with the status of The Area as a common heritage of humankind and the obligation to ensure its resources are used to benefit humankind as a whole.

So what next? A fair question to ask is whether the international community will continue to yield to the pace imposed by TMC or if it will listen to the growing number of states supporting a moratorium on deep sea mining, the scientific community at large, Indigenous Peoples, youth groups, companies, financial organizations, and civil society organizations from across the world warning that deep sea mining poses unacceptable risks.[197]

Some states seem to think that the adequate response to TMC's attempts to get permission to engage in commercial deep sea mining activities outside the UNCLOS framework is to continue to accelerate the completion of a Mining Code. This position needs to be contested in the strongest terms, based, if on nothing else, the deep sea mining industry track of interference in the ISA deliberations. Continuing to rush the completion of a Mining Code at the ISA gives a company that has shown

* The "two-year rule" makes reference to the provisions in paragraph 15(c) of Section 1 of the Annex to the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982. If triggered, it allows a State to submit for approval a 'plan of work' (essentially a request to start commercial mining operations) even if the mining code that would regulate commercial deep sea mining has not been adopted 2 years after such provision has been triggered.

Credit: Deep Sea Conservation Coalition, **https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/**

complete disregard for multilateral due process exactly what they have been trying to achieve at whatever cost.

The fact that (as of July 2025) 37 states—now a more numerous group than the 36 states that compose the ISA Council—are already arguing that a moratorium, precautionary pause or ban on deep sea mining should be enacted, is a testament to the need for more time to carefully consider whether deep sea mining should go ahead at all.

The Mining Code is not the solution—either to deep sea mining's legitimacy problem or to the rising geopolitical tensions it is creating. Many states now recognize that we are still decades away from fully understanding the impacts of the irreversible environmental damage that mining would cause; there is no convincing case that deep sea minerals are necessary for the green transition; there are immense concerns that deep sea mining will again result in a resource grab, by a few corporations based in the Global North, in the Pacific, with little to no benefit to the local populations and peoples, who may also suffer the impacts of environmental destruction.

A moratorium on deep sea mining would, conversely, send the right message at a time when the most important basis for multilateralism in the ocean space, UNCLOS, is threatened by unilateral action. It would promote harmony, and signal that decisions on the future of the seabed must be made collectively by all nations through the ISA and not dictated by the short-term interests of corporations. It would provide the time for continuing advances in scientific knowledge on deep sea ecosystems and associated ecological processes. And it would stress the collective determination to ensure that the deep ocean must only be used to provide equitable benefits for humankind and for peaceful purposes.

Governments should look back at the case of Antarctica, and take inspiration from how much was achieved with its protection via a moratorium. The protection of the southernmost continent from mineral extraction took place at a time when humanity was beginning to understand its critical role in planetary and climate systems. The same level of precaution is now necessary to protect the deep ocean.

A moratorium on deep sea mining would send a clear signal to any state or company that acts outside the ISA, that the global community is united in defending international law, including UNCLOS, and that unilateral action by a single company or country will not be tolerated. TMC is desperately promoting a race to the bottom. Responsible states have a duty to prevent it, not to play the same game, and provide the time and space for careful consideration.

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CONCLUSION

Deep sea mining is unnecessary and unjustifiable. If this reckless industry is permitted to exploit the international seabed, we will be catapulted into a high-risk convergence of ecological harm, geopolitical tension, and militarized technology.

The combination of a rise in manipulative defense and national security narratives around deep sea mining coupled with the United States' recent unilateral actions to bypass multilateralism puts the global order and stability in jeopardy.

The arguments currently being pushed by deep sea mining executives and investors around defense and national security needs are dangerous, unethical, and built on false premises. They risk exacerbating geopolitical tensions while simultaneously placing Pacific Peoples and their cultural heritage in the crossfires of heightened neocolonialization and militarization in the Pacific.

Critical mineral applications for defense purposes clearly exist, but the demand to supply these needs from deep sea mining does not. There is no reason to ever open the international seabed as a new frontier for destructive exploitation. Reducing mineral use and increasing circularity and recycling should be prioritized. Likewise, the proliferation of weapons for profiteering purposes should be universally condemned. If mined, deep sea minerals would inevitably leak into defense supply chains as greed and hubris prevail. This would violate the very foundations of UNCLOS, particularly the mandates for protecting and sharing the benefits of international seabed resources for all humanity and for peaceful purposes alone.

The deep sea mining industry is desperate and in its pursuit of justification does not hesitate to switch between manufactured narratives. Yet as history has shown, it repeatedly fails to launch as a commercial industry.

In an attempt to gain social license and political approval, the industry tried to spin a tale about helping the energy transition and combating climate change. This failed due to the overwhelming and clear environmental risks, developments in battery chemistry, and tech and car companies saying no to their proposed product.

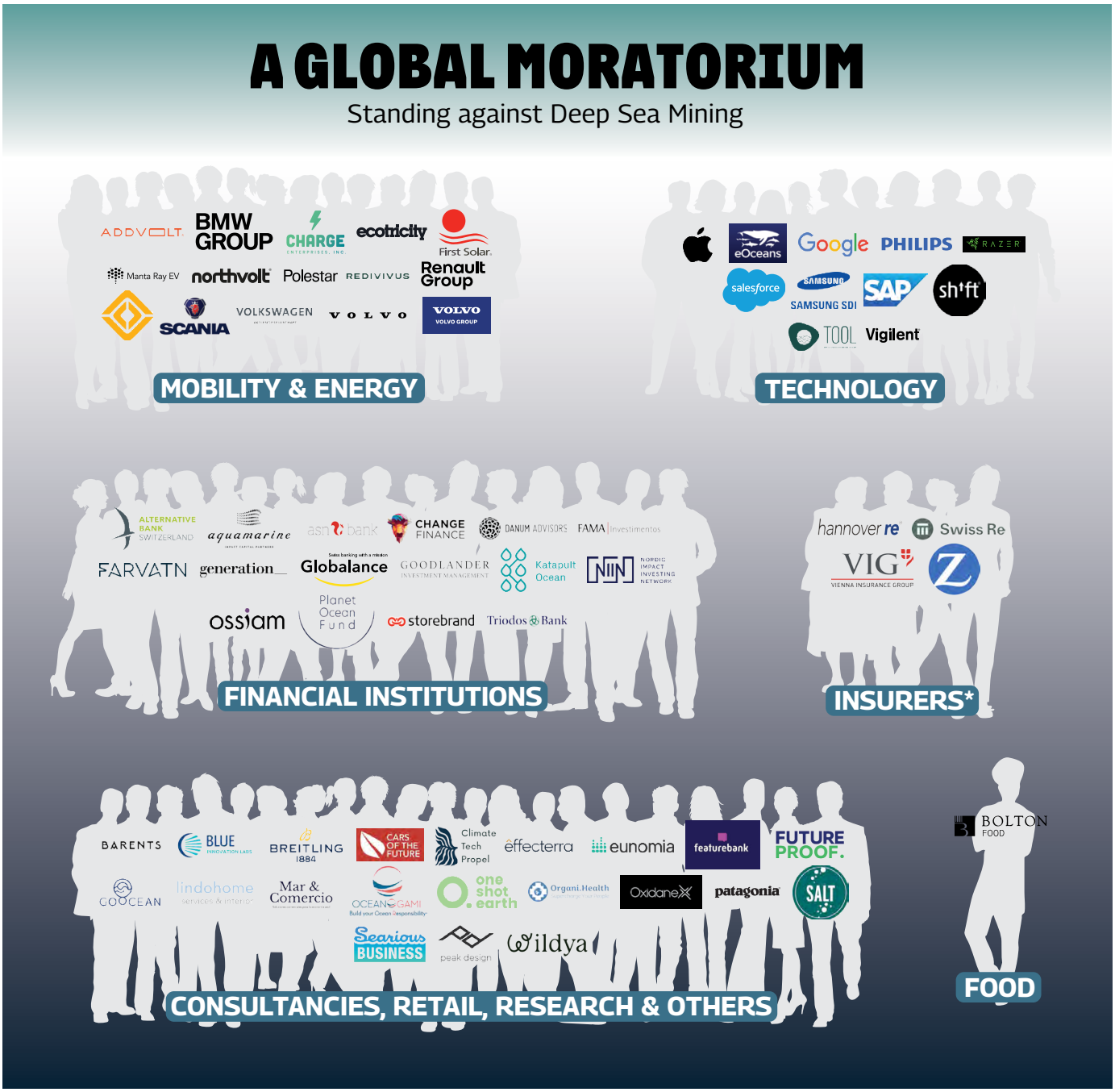
Because of this resistance, opportunists within the deep sea mining sector are now rehashing the geopolitical competition imperatives first deployed during the Cold War, retrofitted to today's politics. They are aligning with defense and security hawks and seeking funding from the military-industrial complex. Anything to make money. But deep sea mining couldn't gain the coveted national security traction during the Cold War, and it's not going to work now.

Governments must be vigilant and not fall for this **deep deception**. Instead, they should focus on collaboration for genuine climate action and de-escalating tensions around the world.

The industry has demonstrated that it has no moral compass. It has abandoned commitments to the green transition, exploited the resources and good will of developing countries, and undermined multilateralism itself—as seen in the case of The Metals Company's public contempt for negotiations at the ISA. This is all a desperate attempt to make deep sea mining relevant

when in reality it's not wanted, not needed, not worth the risk, and must not be allowed to start—whether through reckless unilateral action like the U.S. licensing under DSHMRA or through a Mining Code negotiated at the ISA.

The only viable and responsible solution to stop this dangerous, deceitful industry in its tracks is for all countries to adopt a global moratorium on all deep sea mining both nationally and internationally.



Corporations across sectors have taken public positions against deep sea mining: **https://www.stopdeepseabedmining.org/statement/**

Guiding Principles for Mineral Sourcing and Use

Greenpeace recommends a set of guiding principles for mineral sourcing and use.[198] These principles present a pathway for ensuring just and equitable use of minerals for a fast, just, and green energy transition. Reducing demand and finding alternative supplies where available (for example through circularity and recycling) are key parts of this.[199] There is no reason to ever open the global seabed as a new frontier for destructive exploitation.

Individual governments and those convening as the ISA must play an important role through policy, regulatory, and accountability measures for mineral use and sourcing. Companies should act responsibly even if states lack the ability or willingness to protect and respect human rights and the environment.

Recognizing that each country and community has unique realities shaping feasibility and impact, the following principles can support energy transition when adapted into local contexts and that of the international seabed:

1. Minimize Warming to No More Than 1.5ºC (The Guiding Star)
    - Limiting global warming to no more than 1.5ºC is critical for the sake of climate, nature and humanity. As such, minerals must be prioritized for energy transition above other non-essential uses.
2. Find Just & Equitable Solutions (The Foundation)
    - Justice and equity is foundational to energy transition and must be embedded in all the related solutions for the use and sourcing of minerals.
3. Reduce Demand (Use Less)
    - Slowing mineral demand growth is essential. There are many ways to reduce demand, such as improving public services and transport, fostering sharing and reuse, enhancing the efficiency of technology, and substituting technologies. The surest way to reduce the national security risk from dependence on critical minerals is to invest in novel and alternative technologies which reduce that dependence, rather than increasing the complexity of vulnerable supply chains via unproven technologies with unknown impacts in areas beyond national jurisdiction.
4. Source from “Above Ground” (Use What we Already Have)
    - Recycling must become a preferred source of minerals in the coming decades. Recycling infrastructure, incentives, and supporting policies must be key priorities for governments to maximize this supply.
5. Protect Sensitive Areas, and the Rights of Indigenous Peoples and Local Communities (Restrict Mining)
    - Mining and ore processing activities continue to pose serious risks to people and the environment. “No-Go Zones” including significant natural ecosystems such as the deep sea should be off-limits. The rights of both coastal and terrestrial Indigenous Peoples and local communities must be respected, and stronger protections are needed to prevent harm.

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