Hearing of the House Committee on Natural Resources, Energy and Mineral Resources Subcommittee — "Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Sea Mining" — January 22, 2026

Testimony of Oliver Gunasekara, CEO & Co-Founder, Impossible Metals

My name is Oliver Gunasekara, and I am the CEO and Co-Founder of Impossible Metals. I came to this country 20 years ago and, as a proud naturalized citizen, have been inspired by the kind of innovation only possible in America. Thank you for the opportunity to testify.

The Trump Administration has taken bold action to unlock America's seabed mineral resources, and deep-sea mining is now inevitable. The only question is whether America will lead, or cede the strategic frontier to China. Beijing has spent over a decade positioning itself to dominate this industry by securing the most exploration licenses, building the world's largest deep-sea research fleet, and maneuvering to control the rules that will govern global seabed mining.

American innovation is our competitive advantage. I am a three-time entrepreneur, with previous successful companies in semiconductors, and now in minerals technology. I co-founded Impossible Metals because I recognized that critical minerals have the same strategic importance as coal in the 19th century and oil in the 20th: these are essential resources that will determine America's prosperity, security, and leadership in this century. At the same time, American advances in AI and robotics have opened up a low cost, clean way of collecting these minerals from a vast, untapped resource: the deep sea.

Impossible Metals is a California-headquartered, Delaware-incorporated "B" Corporation that will responsibly collect nickel, copper, cobalt, and manganese from the deep sea.[1] Our groundbreaking technology uses advanced underwater robotics and AI-driven selective collecting—our underwater robots hover over the seafloor and use "pick and place" robotic arms to collect nodules individually, minimizing sediment disturbance. We plan to leave approximately 90% of nodules untouched to preserve marine habitat and biodiversity. Impossible Metals could begin providing critical minerals to processing facilities within three years, without relying on foreign adversaries.

President Trump's Executive Order on *Unleashing America's Offshore Critical Minerals* triggered immediate action by agencies to start the leasing process. For the first time, we can see a path to mineral access in U.S. and international waters. Congress should build on that progress by modernizing our statutory framework, providing pace and certainty to the permitting process, and making the investments needed to anchor a new American export industry that could generate $300 billion in economic output and 100,000 jobs over the next decade.

The technology is ready. The resources are abundant. The Administration has charted the path forward. Congress and industry must both act now to ensure energy abundance, create thousands of quality jobs, and lead a critical global industry of the future before our foreign adversaries.

[1] Impossible Metals, www.impossiblemetals.com; short video, https://www.youtube.com/watch?v=RMt4fu0nGe0.

America Needs New Sources of Critical Minerals for National Security and Prosperity.

Critical minerals are essential for the future of AI, energy abundance, economic growth, and national defense. They are vital for batteries,[2] magnets, submarine sonar, and aircraft engines. We will need 330,000-420,000 tons of copper by 2030 for data centers[3]; nickel is used in military plating; and cobalt is used in fighter jets and armor-penetrating munitions.[4] And we need large quantities: last week, Amazon purchased the copper output from the first new U.S. source in years, but it will take more than four years to produce enough for one large data center.[5]

Global demand is rising rapidly. The World Bank projects a 450% increase in demand for critical minerals like cobalt and nickel by 2050.[6] Benchmark Minerals Intelligence estimates that without seabed mining, over 300 new land-based mines would need to open by 2035 to meet global demand.[7] S&P Global projects a need for 42 million metric tons of copper by 2040, a 50% increase over today, and foresees a shortfall of 10 million tons.[8]

Today, America relies dangerously on foreign nations for these critical minerals. China dominates global rare earths and significant portions of cobalt, nickel, and copper.[9] They have proven they are willing to weaponize their control over these resources — just as they have with our closest allies like Japan and South Korea, and are now doing with us directly.

We now rely on foreign mines that do not meet American environmental and human rights standards. ~75% of nickel comes from Indonesia, where most collection and processing is controlled by China. Over 240,000 hectares of rainforest were lost to mining in 2024 alone, contributing to floods that killed over 1000 people and massive loss of bio-diversity.[10] These rainforests have up to 3000 times greater biomass than the seafloor, where life is scarce and largely microscopic.[11] We see similar harms and appalling levels of child labor in the Democratic

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[2] Both Ford and GM have announced plans to adopt LMR (Lithium Manganese Rich) battery chemistries, which use all of the metals found in polymetallic nodules. Tim Levin, "GM's President Explains Its Bet On LMR Batteries For EV Trucks," *Inside EVs* (Nov. 28, 2025), https://insideevs.com/news/780156/gm-lmr-batteries-explained-mark-reuss/.
[3] Andrea Hotter, "DeepSeek, data centers and copper demand," *Fastmarkets* (Feb. 6, 2025) (citing Macquarie estimates) https://www.fastmarkets.com/insights/deepseek-data-centers-copper-demand-andrea-hotter/.
[4] Jabbar, Silva, Kluwak, and McCaffrey, "Polymetallic Nodules and the Critical Minerals Supply Chain: A North American Approach," Wilson Center (2024) https://www.wilsoncenter.org/sites/default/files/media/uploads/documents/Polymetallic%20Nodules%20and%20The%20Critical%20Minerals%20Supply%20Chain.pdf.
[5] Ryan Deember, "Amazon is Buying America's First New Copper Output in More Than a Decade," *Wall Street Journal* (Jan. 15, 2026) https://www.wsj.com/finance/commodities-futures/amazon-is-buying-americas-first-new-copper-output-in-more-than-a-decade-516a0a1f?st=2uB1fq&reflink.
[6] Kirsten Hund et al., "Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition," World Bank Group (2020), https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf.
[7] Benchmark Minerals Intelligence, "How many mines are needed for the energy transition?", *Benchmark Source*, Jan. 30, 2025, https://source.benchmarkminerals.com/article/how-many-mines-are-needed-for-the-energy-transition.
[8] Daniel Yergin, et al, "Copper in the Age of AI," S&P Global (Jan. 8, 2026) https://www.spglobal.com/en/research-insights/special-reports/copper-in-the-age-of-ai.
[9] Zohan Hasan Tariq and Tom LaTourrette, "The Missing Piece: Minerals Processing and Deep Sea Mining," *RAND* (Sept. 18. 2025), https://www.rand.org/pubs/commentary/2025/09/the-missing-piece-minerals-processing-and-deep-sea.html.
[10] "Indonesia sues firms over environmental harm in flood zone," *Straits Times*, Jan 16, 2026, https://www.straitstimes.com/asia/se-asia/indonesia-sues-firms-over-environmental-harm-in-flood-zone.
[11] *See* Yinon M. Bar-On et al, "The Biomass Distribution on Earth," *Proceedings of the National Academies of Science,* May 21, 2018, https://www.pnas.org/doi/full/10.1073/pnas.1711842115.

Republic of the Congo, where ~70% of cobalt comes from, with the majority of the resource again controlled by China.[12]

Alternatives to collecting new supplies of these minerals are insufficient. Recycling can be a part of the solution, but the main forecast source of materials—batteries from today's electric vehicles—may not be available for 20 or 30 years because of the vehicles' lifespan and second-life use cases like backing up intermittent renewables.[13] Alternative battery chemistries like Chinese-controlled lithium-iron phosphate (LFP) do not work for some personally-owned vehicles or defense systems, because they are too heavy and lack range.[14]

We cannot forgo minerals without sacrificing economic prosperity, our national security, or the planet.[15] To meet rising demand, we need new sources of minerals that are economic, meet our values, fast to production, and free of foreign interference.

Deep-Sea Nodules are a Critical Component of America's Resource Strategy.

Seabed nodules can advance America's goals of abundant, affordable, and secure mineral supply, and create a large new sector within America's leading mining industry.

Opportunity Size: Most of the world's minerals are in the sea—an estimated $20 trillion reserve.[16] There is *three times* as much cobalt in a single seabed area than in all known land deposits. The United States has an estimated one billion tons of nodules in domestic waters, free of foreign interference.[17] The total value of the markets for copper, nickel, manganese, and cobalt is projected to grow from approximately $417 billion in 2024 to $639 billion by 2032.[18]

Attractive Economics: Deep-sea minerals have four valuable metals with high grades, plus rare earth elements.[19] Seabed mining relies primarily on existing ships and ports, and occurs far from population centers. This helps protect against Chinese price manipulation. America's maritime workforce is expected to be able to deploy Impossible Metals' technology, building on U.S. offshore oil and gas operations expertise.

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[12] *See e.g.* Impossible Metals, *Labor Risks in Mineral Supply Chains*, Oct. 7, 2024, https://impossiblemetals.com/blog/labor-risks-in-mineral-supply-chains/; World Resources Institute, "Mining Is Increasingly Pushing into Critical Rainforests and Protected Areas," Oct. 23, 2024, https://www.wri.org/insights/how-mining-impacts-forests.

[13] The reuse of nickel from batteries is forecast to represent just 3% of total demand in 2030 and 10% in 2040. International Energy Agency, "Nickel: Outlook for key energy transition minerals," *Global Critical Minerals Outlook 2024*, https://www.iea.org/reports/nickel.

[14] Impossible Metals, "Inconvenient Facts about LFP Batteries," Nov. 13, 2023, https://impossiblemetals.com/blog/inconvenient-facts-about-lfp-batteries/.

[15] *See* World Economic Forum, https://www3.weforum.org/docs/WEF_Energy_Transition_and_Geopolitics_2024.pdf.

[16] Ilya Epikhin et al, "Seabed Mining: A $20 Trillion Opportunity," Arthur Little (Aug 2024), https://www.adlittle.com/en/insights/viewpoints/seabed-mining-20-trillion-opportunity.

[17] Ernest Scheyder and Jarred Renshaw, "Trump signs executive order boosting deep-sea mining industry: (April 24, 2025) https://www.reuters.com/business/energy/trump-expected-sign-deep-sea-mining-executive-order-thursday-sources-2025-04-24/.

[18] Spherical Insights & Consulting, "Global Copper Market Size, Share, and COVID-19 Impact Analysis" (March 2024), https://www.sphericalinsights.com/reports/copper-market (Copper); Fortune Business Insights, "Nickel Market Size, Share, and Industry Analysis" (2024), https://www.fortunebusinessinsights.com/nickel-market-106576 (Nickel); "Manganese Market Size, Share, and Global Trends Report," *SkyQuest* (February 2024), https://www.skyquestt.com/report/manganese-market (Manganese); "Cobalt Market (2025-2030)," *Grand View Research*, (2024), https://www.grandviewresearch.com/industry-analysis/cobalt-market-report (Cobalt).

[19] The economic viability of processing the rare earth elements is uncertain, and will depend on metal prices.

High Environmental Standards: Impossible Metals has designed its technology to responsibly collect nodules, which sit unattached on the seafloor. We also plan to leave approximately 90 percent of the nodules untouched, to maintain the biological ecosystem.

Speed to Extract: Impossible Metals expects to begin production in 2028, subject to regulatory approvals.

History shows the potential for economic transformation from offshore resource development. In 1960, Norway was a fishing nation with a GDP per capita comparable to that of American Samoa today; it is now one of the wealthiest countries in the world, thanks to offshore oil and gas. Its GDP per capita has grown eightfold in that time, and its sovereign wealth fund is the world's largest, valued at more than $300,000 for every Norwegian citizen.[20] Marine minerals hold the same potential for the U.S. and its territories.

China Has Been Moving Decisively for a Decade to Dominate Deep-Sea Mining.

Chinese President Xi Jinping declared in 2016 "the deep sea contains treasures that remain undiscovered and undeveloped. We have to control key technologies in getting into the deep sea and developing the deep sea."[21] That same year, China enacted a dedicated seabed mining law—years before most Western nations began serious policy discussions.

Beijing has adopted a comprehensive, state-directed strategy to control seabed mining, the final untapped frontier of critical minerals, that mirrors the playbook they have used to monopolize land-based critical mineral processing. It already controls 78% of refined cobalt, 95% of refined manganese, 35% of refined nickel, and 45% of refined copper.[22]

International Licensing and Regulation: Today, China holds more exploration contracts at the International Seabed Authority (ISA) than any other nation with five in total, giving it exclusive exploration rights over 238,000 square kilometers of seabed, an area the size of the United Kingdom.[23] China is the only country with contracts spanning all three seabed mineral types.

China has also positioned itself to shape the rules that will govern this industry. Since 2001, Beijing has served almost continuously on the ISA Council, the body that approves contracts and sets mining regulations, while the United States remains an observer. China has been the largest financial contributor to the ISA since 2021, funds multiple ISA trust programs, has Chinese nationals embedded across ISA technical and financial committees, and hosts the ISA-China Joint Training and Research Centre in Qingdao, which is the first permanent joint ISA research facility ever created with a member state.[24] And it is using these efforts to exercise

[20] Ola Honningdal Grytten, "The Economic History of Norway," *Economic History Association*, https://eh.net/encyclopedia/the-economic-history-of-norway; Reuters, "Norway Wealth Fund Hits Record 20 Trillion Crowns" (Dec. 6, 2024).
[21] Elizabeth Economy, "How China Wins the Future: Beijing's Strategy to Seize the New Frontiers of Power," *Foreign Affairs*, December 9, 2025, https://www.foreignaffairs.com/china/how-china-wins-future-elizabeth-economy.
[22] Tariq and LaTourette, *supra*.
[23] International Seabed Authority, "Exploration Contracts, https://isa.org.jm/exploration-contracts/.
[24] John Grady, "China Could Play Major Role in Drafting New Regulations for Seabed Mining, Says U.N. Official," *USNI News* (Nov. 29, 2023); Yu, T., Liu, R. & Jin, Y. "Toward ecosystem-based deep-sea governance: a review of global approaches and China's participation," *Mar Dev* 3, 1 (2025); Lily Kuo, "China is set to dominate the deep sea

influence over the global mining code, from blocking areas of discussion to opposing an inspection enforcement regime for environmental compliance.[25]

Maritime Investment: At the same time, China has built the largest deep-sea research and oceanographic fleet in the world, expanding from 19 research vessels in 2012 to more than 64 today, and completing 93 ocean-going expeditions across every major ocean basin during its most recent Five-Year Plan.[26] Its newest flagship research vessel has the range, crew capacity, and onboard laboratories required for sustained industrial seabed operations.[27] At least 40 organizations are part of China's state-backed ecosystem, including PLA-linked organizations.[28]

China is now one of the only countries to test collectors at depth. In 2024, China's Pioneer II mining vehicle operated beyond 4,000 meters, retrieving hundreds of kilograms of nodules and crusts, and the ISA approved China Minmetals to test mine in their contracted area in 2025.[29] Chinese firms are also advancing dual-use autonomous underwater vehicle technologies that have both commercial mining and military applications.[30]

Global Dealmaking: China is also expanding its geopolitical footprint across the Pacific by signing seabed mineral cooperation agreements with island nations and actively courting emerging economies with Chinese-built vessels, platforms, processing infrastructure, and financial support for their participation at the ISA.[31]

The question before the United States is therefore not whether deep-sea mining will happen. It is whether America will lead this industry, or once again be forced to buy the foundational materials of its energy, defense, and digital economy from a strategic competitor.

American Innovation Is Our Competitive Advantage.

Opponents of deep-sea mining ask us to choose between economic growth, preserving our environment, and securing our nation. Impossible Metals shows that American ingenuity is the solution to that impossible choice.

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and its wealth of rare metals," *Washington Post* (Oct. 19, 2023); Sunny Cheung and Owen Au, "Roiling in the Deep: PRC Pushes New Deep Sea Order," *Jamestown* (Feb 1, 2025).

[25] Regina Lam, "China's push into deep-sea mining gathers speed," *Dialogue Earth* (Aug 5, 2024), https://dialogue.earth/en/ocean/chinas-push-into-deep-sea-mining-gathers-speed/.

[26] "China's deep-sea breakthroughs drive marine economy expansion during 14th Five-Year Plan," *Bastille Post Global* (Oct. 30, 2025), https://www.bastillepost.com/global/article/5325380-chinas-deep-sea-breakthroughs-drive-marine-economy-expansion-during-14th-five-year-plan.

[27] "China's 1st Domestically Built Deep-Ocean Drilling Vessel Commissioned," *Marine Insight* (Nov. 25, 2024), https://www.marineinsight.com/shipping-news/chinas-1st-domestically-built-deep-ocean-drilling-vessel-commissioned

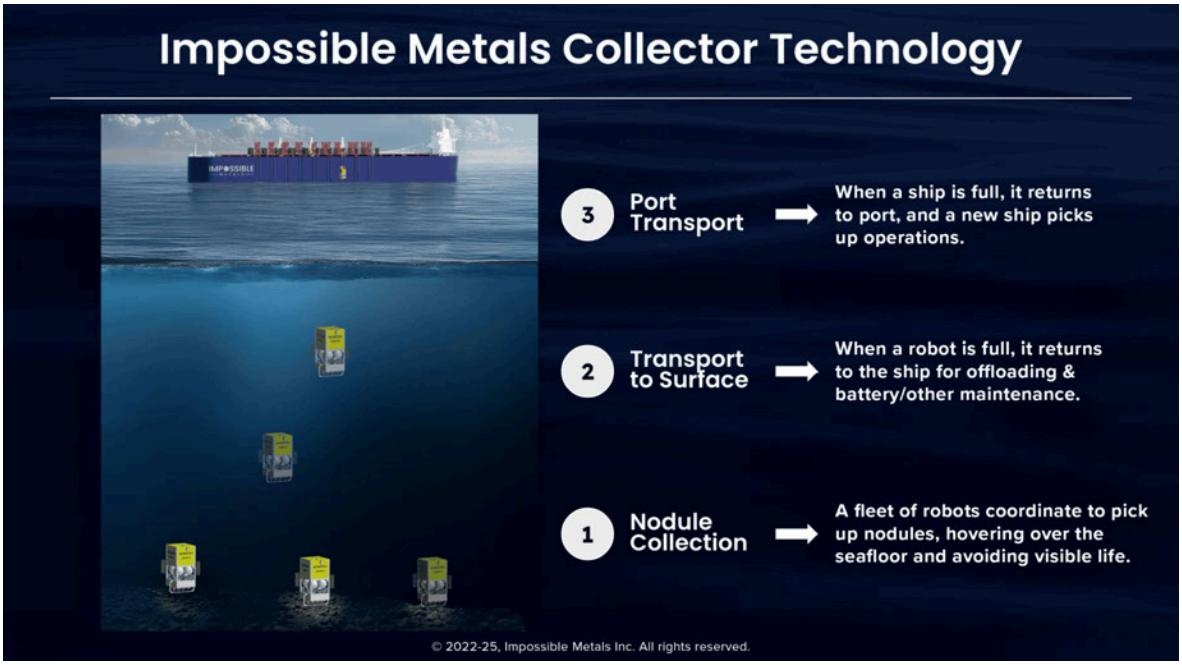
[28] Baron, "Deep-Sea Minerals: The Next Arena of U.S.-China Competition," March 2024 https://5387017.fs1.hubspotusercontent-na1.net/hubfs/5387017/Updated%20Baron%20-%20Deep-Sea%20Minerals_The%20Next%20Arena%20of%20U.S.-China%20Competition.pdf.

[29] "China's deep-sea heavy-duty mining vehicle reaches record depth in sea trial," *China Daily* (July 9, 2024), https://www.chinadaily.com.cn/a/202407/09/WS668cc6a4a31095c51c50d2d3.html; "AFP, UN Body Clears China's Minmetals For Deep-sea Mining Testing" (May 20, 2025), https://www.barrons.com/news/un-body-clears-china-s-minmetals-for-deep-sea-mining-testing-106b03aa.

[30] Baron, *supra*.

[31] Michael Miller, "China extends reach in South Pacific with Cook Islands deal," *Washington Post* (Feb. 14, 2025); "Kiribati explores deep-sea mining partnership with China," *Offshore* (April 10, 2025); *Foreign Affairs, supra*.

Impossible Metals uses homegrown, groundbreaking, selective collection technology to compete, without compromising environmental standards. Our approach uses an underwater robotics fleet, which hovers over the seafloor without landing, using our patented buoyancy engine innovation,[32] and then uses AI-driven "pick and place" robotic arms to collect nodules individually, minimizing sediment disturbance. Image sensing technology identifies visible life on the nodules and we leave those nodules untouched, preserving nodule-dependent fauna. We also plan to leave approximately 90% of total nodules untouched to preserve marine habitat and biodiversity, while maintaining profitability. The robots are retrieved with a revolutionary Launch and Recovery System that can operate even in rough seas, maximizing utilization.



This technology has been tested in the ocean at a depth of over a mile. The final test for regulatory approval will take place next year with the full-scale collector robot.

Impossible Metals' technology promises attractive economics, based on our public economic model.[33] That cost structure comes in part from the inherent characteristics of polymetallic nodules—they are high grade, have four metals, and have low infrastructure costs—and in part from our proprietary technology, which operates with significantly less surface infrastructure than other forms of deep-sea mining. No support vessel or ship-to-ship transfers are required, and we can operate in a wide range of sea states, enabling high utilization. Deep-sea mining's

[32] Impossible Metals, "Impossible Metals Buoyancy Engines: A Revolution in Underwater Technology," Apr. 22, 2025, https://impossiblemetals.com/blog/impossible-metals-buoyancy-engines-a-revolution-in-underwater-technology/.
[33] Impossible Metals, "Techno-Economic Analysis," https://impossiblemetals.com/technology/techno-economic-analysis.

competitive cost structure ensures China cannot undercut U.S. industry with unethical labor practices or state subsidies.[34]

Impossible Metals' technology has been intentionally designed for the lowest environmental impact. We have invested in innovation and designed our system to:

- Preserve unique and ecologically important species through object detection and selective collection.
- Eliminate sediment plumes by avoiding excavation and sediment disturbance, avoiding risk to commercial fishing.
- Minimize acoustic impact that could affect marine mammals by operating low-power robotic systems and reducing the number of vessels.
- Prevent a contamination pathway to commercially important food fish due to the absence of sediment or water column mobilization.
- Maintain deep ocean biomass and carbon storage by leaving surrounding sediments and uncollected polymetallic nodules intact and in a stable pattern.

Over the last 60 years, a significant body of scientific data has been collected on the deep ocean.[35] The Ocean Biodiversity System hosts open-access data on marine biodiversity, with more than 125 million observations on nearly 200,000 species. The ISA Deep Seabed and Ocean Database (DeepData, launched in 2019) contains over 10 terabytes of data, cited by more than 160 scientific publications, gathered from dozens of private company cruises. Much of what we know about the deep ocean comes from private investment for deep-sea mining.

Scientific investigations have disproven some preconceptions about the harms of deep-sea mining. For example, MIT researchers found that the sedimentation disturbance of traditional technologies was only ⅓ to ⅛ of the level that critics hypothesized, and concerns of sediment plumes riding hundreds of feet above the seafloor were not borne out in reality.[36]

Impossible Metals' technology is likely to have even lower environmental impacts. Independent modeling found the expected sediment disturbance of our production-scale device, Eureka III, is expected to be approximately 46 kg/hour.[37] For comparison, the GSR Patania II, which was previously deployed in the same area as our planned Eureka III test, produced a sediment

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[34] Joseph Olbrycht-Palmer, "'Price manipulation' spooking investors eyeing Australia's critical minerals, Chalmers warns," *NewsWire* (Jan. 13, 2026), https://www.news.com.au/national/politics/price-manipulation-spooking-investors-eyeing-australias-critical-minerals-chalmers-warns/news-story/cbb74eef8c55256f090f964f26516b03

[35] Impossible Metals, "Data from the Deep Seabed: What Do We Know?" Feb. 2024, https://impossiblemetals.com/blog/data-from-the-deep-seabed-what-do-we-know/.

[36] "Testimony of Professor Thomas Peacock Before the Subcommittee on Oversight and Investigations, Committee on Natural Resources, Hearing on: 'Exploring the Potential of Deep-Sea Mining to Expand American Mineral Production,' (April 29, 2025), https://www.congress.gov/119/meeting/house/118089/witnesses/HHRG-119-II15-Wstate-PeacockT-20250429.pdf

[37] Independent modeling by DHI Water and Environment, a respected third-party firm. *See* "Environmental Impact Statement for small-scale testing of an AI-controlled nodule harvester in the eastern BGR contract area for the exploration of polymetallic nodules (Clarion-Clipperton Zone), "Appendix A, *available at* https://www.bgr.bund.de/EN/Themen/MarineRohstoffforschung/Downloads/2025_Manganknollen_241218_BGR_EIS.pdf?__blob=publicationFile&v=3.

discharge rate of 52,500-56,000 kg/hour. Impossible Metals is planning a live test to validate this preliminary modeling.

China is using legacy technology.[38] America is innovating—with AI computer vision, cutting edge robotics, and long-lasting batteries. Let the best technology win.

We Can Access These Resources Quickly And Without Relying On China.

There are multiple paths for American companies like Impossible Metals to secure access to minerals free of adversary control. In the near-term, we are partnering with allied nations that hold exploration licenses in international waters to test our technology in well-explored areas.[39] Existing environmental baselining and alternative technology test data makes this the fastest way to demonstrate selective collection's superior environmental impact and effectiveness.

We also requested that the Administration launch a lease sale in U.S. federal waters in the Pacific. The area of the U.S. Exclusive Economic Zone (EEZ) 130-305 miles off the coast of American Samoa is believed to have extraordinarily rich deposits of critical minerals.[40]

Impossible Metals is committed to engaging with the community of American Samoa. We have voluntarily committed to dedicate one percent of our profits from marine mineral collection to benefit the local community. Beyond this financial commitment, we view community engagement as a vital part of responsible resource development. We have begun engaging with leaders and residents in American Samoa,[41] and we plan to continuously ramp up our local engagement as the multi-year lease sale process advances. Deep-sea mining presents valuable employment and investment opportunities for the community,[42] but we also recognize that historically, Pacific Island communities have seen opportunities that did not endure or live up to their potential. We are committed to building something lasting, in partnership with the people of American Samoa.

Finally, with the support of the State Department, Impossible Metals's subsidiary was sponsored by the Kingdom of Bahrain, which allowed the company to apply to the ISA for an exploration license in the Clarion Clipperton Zone. The application is for a resource area of 75,000 km^2 containing polymetallic nodules with high grades of critical metals. This application will be considered at the next ISA meeting in just over a month.

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[38] The patents for the collector systems that China and most industry players rely upon were published in the 1970s, with incremental improvements since then. Porter Hoagland II, "Patent Activity in the Seabed Mining Industry," *Woods Hole Oceanographic Institute* (May 1985).

[39] Impossible Metals, "Impossible Metals' Eureka III Test in BGR Contract Area of CCZ," https://impossiblemetals.com/impossible-metals-eureka-iii-2026-test-in-bgr-contract-area-of-ccz/.

[40] The Cook Islands' EEZ, adjacent to this area, has an estimated ~12 billion tons of critical minerals, and the seafloor geology, deep-sea currents, and sedimentation rate suggest mineral-rich deposits in the U.S. EEZ nearby. Katy Watson, "Mining the Pacific—future proofing or fool's gold?", Dec. 9 2024, https://www.bbc.com/news/articles/c17d04ljzxko.

[41] This includes presenting to the Regional Ecosystem Advisory Committee, participating in initial town halls and local media interviews, and making informational materials publicly available. *See e.g.*, "Advancing Responsible Deep-Sea Mining: Our Voice At The American Samoa Forum" (2025), https://impossiblemetals.com/blog/advancing-responsible-deep-sea-mining-our-voice-at-the-american-samoa-forum/.

[42] E.g., local provisioning of ship operations and crew, emergency and standby vessel support, port facility utilization, environmental monitoring, and onshore testing. *See* Oliver Gunasekara, "Response to the BOEM RFI for Commercial Leasing Minerals Offshore American Samoa," July 16, 2025, https://impossiblemetals.com/blog/response-to-the-boem-rfi-for-commercial-leasing-minerals-offshore-american-samoa/.

The Trump Administration Has Begun Unlocking Access.

The United States already possesses the statutory foundation for deep-sea mining. The Outer Continental Shelf Lands Act (OCSLA) grants the Bureau of Ocean Energy Management (BOEM) authority to offer leases for mineral exploration and development within the U.S. EEZ. The Deep Seabed Hard Mineral Resources Act of 1980 (DSHMRA) established a licensing regime for American companies operating in international waters, recognizing that the United States need not await international consensus to secure its own mineral future. These laws provide the legal architecture. What has been lacking until now is the political will.

President Trump's Executive Order on *Unleashing America's Offshore Critical Minerals* has changed that calculus decisively.[43] The Executive Order triggered immediate action at BOEM and NOAA on leasing, mapping, and exploration. In response to Impossible Metals' unsolicited request for a lease sale in federal waters near American Samoa, Interior and BOEM have taken important steps this year: updating Interior policies to reduce delay, issuing Requests for Information for three different areas within the U.S. EEZ, and designating a potential lease area in federal waters near American Samoa. NOAA has proposed new regulations that would speed licensing by creating an option for a consolidated exploration and exploitation permit, and accelerated its ocean mapping efforts in areas of strategic mineral interest.

We can now see a path to mineral access in U.S. waters and, through President Trump's direction to begin using DSHMRA for American companies, in international waters. For the first time, deep-sea mining companies can see the light at the end of the licensing tunnel.

With these bold actions, America is standing up to China as they attempt to shape the international licensing system at the ISA to their advantage.

The world is responding. The ISA is accelerating its efforts on the commercial mining code.[44] The question is no longer whether deep-sea mining will happen, but which country will lead: setting the technological and environmental standards, building the world's next great export industry, and securing the supply chains to power the industries of the future.

Congress Must Now Codify This Progress and Address Remaining Statutory Barriers.

While the Administration has taken essential steps, Congress should now strengthen the statutory framework to provide regulatory certainty. A predictable, durable, and efficient permitting process is an absolutely essential step to unleash the billions in private capital that will be required for scientific research, innovation, and manufacturing on these projects.

First, we must solidify the progress made so far. Representative Ezell's legislation, H.R. 4018, would codify President Trump's Executive Order into statute, ensuring that the nation's commitment to seabed minerals endures. Impossible Metals strongly supports this legislation.

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[43] "Executive Order: Unleashing America's Offshore Critical Minerals and Resources" (April 24, 2025), https://www.whitehouse.gov/presidential-actions/2025/04/unleashing-americas-offshore-critical-minerals-and-resources/.

[44] ISA President H.E. Duncan Laki, "Briefing Paper/Scenario Note on the negotiations of the draft regulations on exploitation of minerals in the Area," June 4, 2025, https://www.isa.org.jm/wp-content/uploads/2025/06/Presidents-Briefing-Paper-for-2nd-part-30th-session-v20250604.pdf (". . . it is essential that delegations continue to engage in good faith and intensify their efforts.").

Second, Congress should establish predictable statutory timelines for each stage of the leasing process. Under OCSLA, most steps involving BOEM's decision-making and analysis currently lack defined timelines, and there are no clear consequences for missed deadlines. BOEM should also produce a five-year outlook on the Marine Minerals Program, similar to the National OCS Oil and Gas Leasing Program, to inform prospecting activities.[45]

Third, Congress should streamline and clarify the permitting process. BOEM's current regulations involve six comment periods before commercial collection begins: three before a competitive lease sale can commence, with additional comments and approvals for delineation, test mining, and commercial collection plans.[46] Unlike the proposed DSHMRA process, where an Environmental Impact Statement is prepared in response to a specific application, BOEM's environmental review first occurs before a collection technology has even been selected or exploration work has begun, when there is substantial uncertainty about impacts. Congress should shorten timelines and agency burden, while retaining ample community engagement.

Fourth, Congress should strengthen the certainty of granted permits. Companies need confidence that the regulatory certainty of a lease will justify the large sums required. The permit certainty provisions of the recent House-passed SPEED Act, championed by Chairman Westerman and Representative Golden, would prevent any administration from interfering with granted permits for political reasons.

Companies pursuing licenses under DSHMRA also need greater confidence that the U.S. government will defend the permits internationally. DSHMRA was enacted before the UN Convention on the Law of the Sea and does not anticipate situations where the ISA could grant a conflicting permit for the same area as an American DSHMRA permit. The original rules provided that government officials from the U.S. would use their good offices to assist the American company and the foreign sponsored applicant company to resolve a conflict, but this provision has sunset. Resurrecting a version of this would provide companies vital assurance.

Fifth, Congress should match lease terms under both OCSLA and DSHMRA to international standards. The proposed primary exploitation contract length for ISA licenses will be 30 years, with a possibility of a further 30-year extension. OCSLA and DSHMRA each provide only 20-year exploitation terms. American companies operating in U.S. waters or under DSHMRA permits should not be disadvantaged compared to foreign competitors in international waters.

Sixth, Congress should extend revenue sharing to coastal communities. Under the Gulf of Mexico Energy Security Act of 2006, a portion of royalties from offshore oil and gas leases in federal waters flows to neighboring Gulf Coast states, building public trust and funding coastal resilience projects. The same precedent should be applied to deep-sea mining.

Seventh, Congress should authorize a new public-private partnership to ensure that minerals gathered under DSHMRA and OCSLA permits actually remain in the United States and address

[45] However, based on the experiences with the Oil and Gas Leasing Program and as a sub-regulatory guidance document that does not generate reliance interests, this should have fewer formal requirements; in line with Executive Order 13891, a single comment period should be sufficient.
[46] 30 CFR Parts 581-582; *see also* BOEM, "BOEM OCS Minerals Leasing Process - American Samoa," https://www.boem.gov/video/renewable-energy/state-activities/boem-ocs-minerals-leasing-process-american-samoa.

our domestic national security needs. Under one vision for this program, participating companies would commit to domestic processing of nodules, provide a portion of offtake to the U.S. government at market prices, and share data with NOAA or BOEM. In return, participating companies would receive expedited permit processing; funding support for exploration, domestic manufacturing of collector technology, and U.S.-flagged ship retrofits; visibility on the Permitting Council dashboard; and designated points of contact at relevant government agencies. This structure would align private incentives with national objectives.

Beyond Mineral Access, Now Is The Time For Congress to Enable The Industry to Scale.

Securing mineral access is necessary, but not sufficient. With forceful policy action, deep-sea mining could become one of America's most significant export industries, generating $300 billion in U.S. economic output and creating 100,000 domestic jobs over ten years.[47] But realizing that vision requires going beyond leasing reform to the policies that will enable scaling.

First, Congress should direct the National Defense Stockpile to include deep-sea nodules procured from American waters and nodule-derived minerals. Unlike direct subsidies, this is a market-making mechanism that the government can recoup or even profit from as metal prices rise. For the industry, a guaranteed buyer provides the demand signal that allows private capital to take the risks of ship retrofits, robot manufacturing, and mineral collection. For the nation, it creates a strategic reserve of metals critical for national security that degrade more slowly than processed metals and incentivizes construction of domestic processing facilities adjacent to the stockpiles.

Second, Congress should support investments in domestic mineral processing facilities and manufacturing. Impossible Metals aims to partner with a domestic processor, but today the United States currently has no processing capability for the critical minerals found in polymetallic nodules. Without domestic facilities, we forfeit jobs, pay higher transport costs, and remain vulnerable to adversary supply restrictions. China directly funds and controls its mineral processing industry; America's approach should be to leverage targeted incentives that attract private capital. Congress can accelerate domestic processing capacity through the Defense Production Act, innovation grants for technologies that can efficiently refine multiple metals from seabed minerals, and trade agreements with allies like Japan that have relevant facilities.

Third, Congress should accelerate government mapping and resource estimation of the U.S. EEZ. As of late 2024, only 52% of U.S. coastal, ocean, and Great Lakes waters have been mapped, and at current pace, the goal of complete mapping will not be met until 2041—eleven years behind schedule.[48] Prioritizing areas with potential deep-sea mineral resources for earlier mapping and nodule sampling would provide the foundational data that private investment requires. Rep. Hunt and Vice Chair Begich's CORE Act (H.R. 2556) would require an inventory and analysis of offshore mineral resources, including in the EEZ.

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[47] Scheyder and Renshaw, *supra* (citing Administration estimates).

[48] National Ocean Mapping, Exploration, and Characterization Council, "Implementation Plan Update for the National Strategy for Ocean Mapping, Exploring, and Characterizing the U.S. EEZ," Dec. 2024, p. 5, https://www.noaa.gov/sites/default/files/2025-01/2024%20NOMEC%20Implementation%20Plan_FINAL.pdf.

These actions will de-risk private capital by demonstrating government commitment; catalyze American shipbuilding by creating demand for specialized vessels; create new robotics, manufacturing, and refining jobs across the country; and ensure that deep-sea resources translate into secure American supply chains rather than foreign processing dependence.

Conclusion

The Trump Administration has taken bold action to unlock America's seabed mineral resources. Deep-sea mining is now inevitable. The only question is whether America will lead—or cede this strategic frontier to China, which has spent a decade positioning itself to dominate the industry through state-backed investment and influencing the international licensing regime.

America’s path to competing with China can only lie in rapid domestic action. By building a commercially viable, technologically superior deep-sea mining industry, we will reshape the global landscape. American companies demonstrating the economic and environmental superiority of selective collection technology will set a de facto global benchmark, regardless of what rules China writes at the ISA. When Pacific Island nations see that partnering with America means access to superior technology, genuine community investment, and a counterweight to Beijing’s influence, it will change the calculus of seabed mineral cooperation agreements.

American innovation is our competitive advantage. We are proving that AI-driven robotics can deliver minerals faster, cheaper, and more responsibly than the legacy dredging technology that China relies upon. Congress should now act to codify this progress, modernize our statutory framework, and make the investments that will build a new American industry.

The race is on. America must win it.