

## **U.S. Offshore Minerals: A National Priority**

*Sophy M. Laughing, Ph.D., MBA*

Independent Researcher

November 2025

---

**ABSTRACT:** The global offshore minerals landscape has undergone a decisive shift between 2022 and 2025. What was once a fragmented ecosystem of uncertain regulatory pathways and pre-commercial technologies has bifurcated into two competing regimes: an increasingly stalled multilateral process under the International Seabed Authority (ISA), and an emerging U.S. domestic pathway activated by Executive Order 14285, *Unleashing America’s Offshore Critical Minerals and Resources*. The United States, long a non-party to UNCLOS and a persistent objector to the “common heritage” mining regime, has now moved to operationalize the latent authority embedded in the Deep Seabed Hard Mineral Resources Act (DSHMRA). This paper argues that the April 2025 executive order represents the first cohesive U.S. strategy to integrate seabed minerals into national security, industrial policy, and supply-chain resilience. It directs NOAA, BOEM, Commerce, Interior, Energy, and Defense to expedite exploration and commercial review, modernize permitting, and assess domestic processing and financing mechanisms—including DPA, stockpile acquisition, EXIM, TDA, and DFC support.

In parallel, the Cook Islands' 2025 decision to defer any mining determination until at least 2032 removes the most credible near-term Pacific EEZ competitor from the 2020s–early-2030s supply curve. Combined with stalled ISA exploitation regulations, Indo-Pacific political fragmentation, and Europe's turn toward moratoria, this delay tightens long-term expectations for nickel, cobalt, copper, and manganese availability. The result is a structural reordering of investor risk: for the first time, a U.S.-flag seabed minerals program offers a sovereign, politically stable, and administratively legible permitting arc that capital markets can underwrite without exposure to unresolved ISA governance.

Using the 2022 IRENA rare earths assessment as a baseline, this paper evaluates how the United States' newly assertive posture interacts with global demand trajectories—particularly the 11–26× projected increase in permanent-magnet rare earth requirements for the energy transition. It then develops a strategic hypothesis for U.S.-flag leadership: that the operator capable of aligning with expedited domestic licensing, building or co-locating processing capacity within North America or trusted allies, deploying industrial-scale collection and lift systems, and establishing verifiable environmental baselines will occupy the anchor position in the Western critical-minerals supply chain.

The paper concludes that U.S.-flag leadership will not emerge from legal assertion alone, but from strategic execution under conditions of dual-regime governance. A credible operator must navigate U.S. administrative law, international contestation, technology uncertainty, and environmental scrutiny simultaneously. The United States now possesses—uniquely among Western states—a coherent, sovereign framework to advance seabed minerals at industrial scale. The companies that operationalize this framework with legitimacy, discipline, and environmental rigor will define the shape of Western supply-chain security for the coming decades.

---

### **I. Introduction: 2025 Game Changer**

Between 2022 and 2025, the offshore mining world changed.

In 2024:

- The Cook Islands and several ISA-sponsored contractors were modeling first commercial extraction in the late 2020s to early 2030s
- The Metals Company and other Canadian-backed actors were targeting initial commercial

production in the late 2020s, with scale-up into the 2030s

- On seabed mining, U.S. policy was ambiguous. The United States had the Deep Seabed Hard Mineral Resources Act (DSHMRA) on the books since 1980 but had never issued a commercial recovery permit and had no dedicated seabed mining executive order before 2025. Prior critical-mineral executive orders (2017–2021) focused on terrestrial

mining and supply chains, not seabed nodules

- Investors saw ocean minerals as high-risk and high-uncertainty

### **A. Executive Order 14285: Unleashing America’s Offshore Critical Minerals and Resources**

Executive Order 14285 (“Unleashing America’s Offshore Critical Minerals and Resources,” April 24, 2025) did three things that matter to investors, supply-chain strategists, and national-security planners:

- It explicitly framed U.S. seabed minerals as a national security and economic priority and directed agencies to move from passive oversight to active development. The order provides direction and political signal and instructs agencies to create expedited processes, but it does not itself guarantee clarity or predictability; those depend on the

follow-on NOAA and BOEM rulemakings and still sit under NEPA and litigation risk.

- It instructs NOAA, BOEM, and Commerce to establish expedited processes for seabed mineral exploration and commercial recovery, shifting their mandate toward facilitating (rather than stalling) permitting within U.S. law. This means NOAA, BOEM, and Commerce now have a mandate to expedite the process for reviewing and issuing exploration licenses and commercial recovery permits under DSHMRA in areas beyond national jurisdiction, while Interior and BOEM are directed to establish an expedited process for prospecting and leasing on the U.S. outer continental shelf.
- It reframes offshore nodules as a sovereign supply-chain asset for

defense, infrastructure, and energy. That is the precondition for capital markets to begin valuing U.S.-flag programs as strategic infrastructure. Once the United States frames offshore nodules as national-security infrastructure, it creates the conditions under which capital markets may start valuing U.S.-flag programs in a manner comparable to liquefied natural gas export capacity or semiconductor fabrication.

This order materially improved the credibility of a U.S.-flag seabed minerals program.

## **II. SBMA: Cook Islands Pushes Commercial Decisions to 2032+**

In late 2025, the Cook Islands Seabed Minerals Authority confirmed that existing five-year exploration licences issued in 2022 would run their full term and that licence holders would be required to apply for a

further five-year renewal before any application for commercial mining could be considered. In practical terms, this defers any mining decision in the Cook Islands' exclusive economic zone until at least 2032.

The Cook Islands has been regarded as one of the most advanced Pacific EEZ seabed jurisdictions, with investor-grade legislation, a dedicated regulator, and visible public governance. Its decision to extend exploration and delay any move to exploitation has several consequences:

- It removes one of the only near-term non-U.S. Pacific jurisdictions from the 2020s–early-2030s supply curve
- It tightens expected long-term supply in nickel, cobalt, copper, and manganese feedstock
- It reduces investor optionality in the Pacific by pushing a prospective 2030s production corridor into the mid-2030s or beyond

In internal modeling, this delay removes on the order of 1.5–2 Mt/yr of potential 2030s nodule throughput from the non-U.S. Pacific supply curve. That figure is scenario-based rather than an official SBMA forecast, but it illustrates the magnitude of the gap created if Cook Islands production is pushed out by at least half a decade.

The Cook Islands’ decision to extend exploration licences by five years, deferring any mining determination until at least 2032, is one of the most consequential Pacific developments in deep-sea minerals since Nauru triggered the ISA two-year rule in 2021. It removes the most advanced Pacific EEZ seabed jurisdiction from the 2020s–early-2030s supply curve, tightening long-term expectations and reinforcing the strategic value of a U.S.-flag program.

### **III. Combined Effect: From “A Player” to the Only Scalable Western Pathway**

Taken together, the U.S. executive order and the Cook Islands delay sharply narrow the field of credible Western options for industrial-scale seabed minerals.

As of 2025, the landscape appears as follows:

- China controls roughly 70 percent of rare earth mine production and around 90 percent of global refining and magnet manufacturing
- The Metals Company (Canada) remains fundamentally ISA-dependent and non-sovereign, even with a U.S. subsidiary now pursuing licences under DSHMRA
- The European Union has no unified seabed mining market; most member states are now aligned around a moratorium or precautionary pause, and no EU coastal state has opened its EEZ to commercial deep-sea mining

- The Cook Islands has effectively pushed any mining determination to 2032 and extended exploration only
- Japan is focused on scientific and pilot programs—including test mining rare-earth-rich mud in its EEZ—rather than committed commercial operations
- Norway opened large Arctic areas for potential seabed minerals but then paused its licensing round until at least 2025, leaving its regime in political limbo

Practically, this leaves the United States as the only Western jurisdiction with both

1. large-scale EEZ potential and
2. a clear political signal to proceed rather than pause.

In that environment, U.S.-flag companies become the only commercially bankable Western vehicles that can plausibly deliver

industrial-scale production by the early 2030s.

#### **IV. How This Changes the Game for the United States**

By removing the Cook Islands from the 2020s–early-2030s supply curve, the expected global supply of nodules tightens. The forward supply curve shifts inward. The result is not an immediate price spike but a higher probability of structurally stronger long-term pricing for the underlying metals and a deeper scarcity premium for any project capable of delivering at scale. U.S.-flag programs sit directly in that gap.

##### **A. First-Mover Advantage under a Sovereign Regime**

Under the U.S. executive order, NOAA, BOEM, Commerce, Interior, Energy, and Defense are all directed to move from passive oversight to active development. Specifically:

- NOAA and Commerce are instructed to “expedite the process” for reviewing and issuing seabed mineral exploration licences and commercial recovery permits under DSHMRA.
- Interior is instructed to establish an expedited process for prospecting and leasing seabed mineral resources on the U.S. outer continental shelf.

This is not a statutory fast track, but it is a presidential directive to build accelerated and consolidated processes within existing law. For investors, that matters: it signals that the United States intends to act on its legal authorities instead of leaving them dormant.

### **B. Sovereign De-Risking vs. ISA Risk**

The single largest risk factor in most investor assessments of seabed minerals has been ISA risk: an incomplete mining code,

unstable timelines, and fractured politics in “the Area” beyond national jurisdiction. A U.S.-controlled pathway under domestic law does not eliminate environmental or legal challenges, but it relocates them into a familiar U.S. administrative framework with known agencies and predictable procedures. This creates a relative de-risking that makes payback models and financing structures materially more defensible.

### **C. Asset-Level Value Uplift**

If non-U.S. jurisdictions are delayed or politically constrained, every U.S.-flag collector vessel effectively captures a larger share of unmet demand. Vessel-level net present value and program-level economics become more robust in scenarios that assume:

- limited or delayed ISA-area production, and
- a Cook Islands mining determination no earlier than 2032

In such a world, the marginal value of each capable U.S. vessel and processing train rises.

#### **D. Regulatory Credibility and Capital Allocation**

Institutional investors are wary of untested or politically unstable regimes. U.S. federal oversight may be stringent, but it is legible. Once the U.S. exclusive economic zone is understood as the last stable and scalable Western mineral frontier with an explicit presidential directive behind it, capital allocation begins to shift from “optional exposure” to “strategic exposure.”

The United States is not yet dominant in volumes, but it now possesses something it lacked before 2025: a credible, sovereign, policy-supported pathway to industrial-scale seabed minerals. That alone is enough to re-rank U.S.-flag programs in global portfolios.

Canada remains a relevant ISA-driven actor, but the only sovereign critical-minerals pathway in the West with both industrial scalability and political predictability is the United States.

#### **V. The 2022 IRENA Report**

The 2022 IRENA report, *Critical Materials for the Energy Transition: Rare Earth Elements*, functions as the zero-point baseline for this analysis and was used to inform the paper, “*Leveraging PEMEX Offshore Assets for Rare Earth Element (REE) Mining and Renewable Energy Expansion.*”

#### **A. Demand and Supply Baseline in 2022**

In 2022, IRENA and related IEA scenarios already showed:

- strong overall REE demand growth, including scenarios in which demand for permanent-magnet rare earths in wind turbines alone could rise by a

factor of 11–26 by 2050 in high-deployment pathways

- heavy structural dependence on Chinese refining and magnet manufacturing
- a global supply chain concentrated in a small number of jurisdictions, with limited diversification options

At that time:

- offshore minerals were still pre-commercial and treated as an emerging, high-uncertainty option
- Chinese dominance in refining and magnet production was framed primarily as a supply-risk and trade-exposure issue, not yet as a fully securitized national-security threat
- the 2050 demand curve was treated largely as an engineering and industrial-capacity challenge
- U.S. offshore mineral development was not an active policy track;

DSHMRA existed on the books but had not been used to license

- commercial recovery
- Pacific EEZ and ISA regimes were expected—optimistically—to mature toward initial commercialization in the 2030s
- no Western government had articulated a sovereign seabed-minerals strategy designed to secure REEs and related metals at scale outside Chinese control

## **B. Reframing 2022–2025**

This paper builds directly on that 2022 baseline. It takes IRENA and IEA demand trajectories and supply-risk diagnosis as given and then asks a different question:

*What happens when, between 2022 and 2025, the following occur?*

- The United States issues its first executive order dedicated to seabed

minerals, explicitly tying them to national security, industrial strategy, and secure supply chains and instructing agencies to expedite licensing and streamline development under U.S. law; and

- the Cook Islands, previously one of the most advanced Pacific EEZ candidates for nodule production, defers any mining decision until at least 2032

The answer, developed in the sections that follow, is that the landscape shifts from broad, global uncertainty about whether seabed minerals will ever materialize to the emergence of a credible, U.S.-centric pathway that investors and policymakers can underwrite. The world has not moved from Chinese dominance to U.S. dominance in three years, but it has moved from a world with no sovereign Western plan to one in which the United States has, for the first

time, a structured federal framework and a clear strategic intent to compete.

## **VI. Implications for U.S.-Flag Leadership (A Strategic Hypothesis)**

For the first time since the United States enacted the Deep Seabed Hard Mineral Resources Act in 1980, the federal government has articulated a cohesive national framework for seabed minerals. Executive Order 14285 transforms a dormant statutory authority into an active strategic instrument, directing NOAA, BOEM, Commerce, Energy, and Defense to expedite exploration and commercial review under U.S. law. Against a backdrop of stalled ISA rulemaking and Pacific delays, this signals a structural shift: the United States is positioning itself to operate—not wait—in a domain long considered inaccessible.

From a leadership and investment perspective, this moment cannot be understood solely through legal analysis. It must be interpreted as a strategic operating environment shaped by parallel legal regimes, geopolitical friction, industrial policy, and the realities of global supply-chain vulnerability. The U.S. pathway is real, it is contested, and it is actionable. It demands executive leadership capable of navigating domestic regulatory acceleration while maintaining international legitimacy and environmental credibility.

### **A. A Dual-Regime World: The Reality U.S.-Flag Leaders Must Operate In**

The legal landscape for deep-sea minerals now functions as two overlapping systems:

- The ISA regime, grounded in UNCLOS Part XI, which treats the deep seabed as the “common heritage of mankind,” requires mining to occur through the

International Seabed Authority, and remains gridlocked in its effort to finalize exploitation regulations. More than thirty states—including the European Union bloc—now endorse moratoria or precautionary pauses, highlighting the political sensitivity and slow pace of the multilateral system. This is the environment most Western companies assumed they would need to operate in.

- The U.S. domestic regime, grounded in DSHMRA, which since 1980 has authorized NOAA to issue exploration and commercial recovery licenses for mining in areas beyond national jurisdiction. The United States is not a party to UNCLOS, has consistently objected to the Part XI regime, and has renewed U.S. exploration licenses (USA-1 and USA-4) repeatedly since 1984.

Executive Order 14285 directs federal agencies to expedite the DSHMRA permitting process and integrate seabed minerals into the nation's critical-minerals strategy. This is the environment the United States has now chosen to operationalize.

James Kraska's analysis situates the U.S. pathway within the persistent-objector doctrine: a state that has continuously rejected a norm during its formation is not bound by it. The United States' objections to the "common heritage" mining regime span five decades, congressional legislation, executive statements, and NOAA licensing practice. This gives the United States, in Kraska's view, a defensible legal foundation for issuing DSHMRA licenses in areas beyond national jurisdiction even without ISA approval.

A U.S.-flag leader does not need to argue this doctrine but must understand its implications. In this industry, competitors are constrained by a multilateral regime, while a U.S.-flag company is regulated by a domestic one. That does not eliminate risk, but it does clarify its dimensions.

#### **B. Domestic Acceleration vs. International Contestation**

Executive Order 14285 creates a federally aligned operating space: NOAA and BOEM are instructed to streamline and expedite licensing; Commerce, Energy, and Defense are tasked with mapping, processing, and financing support; and EXIM, DFC, and TDA are directed to evaluate tools for enabling seabed mineral projects. These are not symbolic gestures; they are operational directives.

But they activate a friction point: most ISA members, environmental coalitions, and

maritime legal scholars argue that U.S. unilateral licensing undermines the ISA system. Others—especially Indo-Pacific partners concerned about China’s dominance—quietly welcome an American alternative. The result is a predictable, durable political split.

For an offshore minerals mining leader, this means the risk profile is different from any other offshore sector:

- regulatory risk sits primarily within U.S. administrative law
- geopolitical risk sits in diplomatic forums and international environmental politics
- commercial risk stems from technology, logistics, and capital intensity
- reputational risk is driven by global non-governmental organizations that treat deep-sea mining as inherently controversial

In this environment, the United States offers the most stable permitting timeline, but not the least resistance. U.S.-flag leadership is a strategic act rather than a procedural one.

### **C. The Four Strategic Pillars a U.S.-Flag Program Must Build**

#### **1. Federal Permitting Architecture That Can Withstand Scrutiny**

DSHMRA and Executive Order 14285 establish the licensing lane, but the credibility of that lane depends on how rigorously a company aligns with NOAA’s environmental and operational requirements. NOAA’s proposed updates—consolidating exploration and commercial permitting, strengthening environmental review, and modernizing data obligations—signal that U.S. leadership requires high transparency and disciplined compliance.

An offshore mining leader must treat permitting not as paperwork but as governance infrastructure.

## 2. Domestic or Allied Processing Capability

The United States cannot claim sovereignty over supply chains if nodules leave the country for processing. Congress, the Department of Defense, and the executive order already identify processing as the critical missing link. Domestic concentration, separation, and refining—whether onshore or modular offshore—is essential to insulating U.S.-flag operations from China’s refining monopoly.

A sovereign extraction program without a sovereign processing chain is not a sovereign supply chain.

## 3. Industrial Vessel Deployment and Scalable Technology

No commercial-scale deep-sea mining system exists anywhere in the world. The ISA regime is still shaping its environmental

requirements; U.S. agencies are shaping theirs. Leadership will require a fleet built to the highest operational and environmental standards, not the minimum viable standards. U.S.-flag companies must design for durability under both U.S. scrutiny and potential future international integration.

## 4. Anchor Demand and Financial Backstopping

The executive order directs federal financing institutions and national security bodies to explore tools that support exploration, extraction, processing, and monitoring. This includes potential use of the Defense Production Act, export credit support, stockpile acquisition, and federal offtake structures. For an industry with high capital expenditures and long development timelines, demand certainty is not optional; it is the foundation of capital access.

A leader in offshore mining must treat federal engagement as a structural component of the business model.

- demonstrate that U.S. unilateralism does not mean environmental minimalism

#### **D. Building Legitimacy—Not Merely Avoiding Illegitimacy**

If the ISA regime views U.S. unilateral action as a threat, and non-governmental organizations treat deep-sea mining as inherently harmful, then complying with U.S. law is the floor, not the ceiling, for leadership. A credible U.S.-flag program must:

- generate openly verifiable environmental baselines
- support independent scientific review
- publish operating data at a level that demonstrates stewardship
- develop partnerships with Pacific stakeholders and scientific institutions

This is how a company defuses critiques that it is bypassing global norms. It is also how it earns the legitimacy required to lead globally, even in a contested regime.

#### **E. The Strategic Hypothesis: Where U.S.-Flag Leadership Actually Emerges**

When offshore minerals mining leaders combine the legal structure, the geopolitical environment, the industrial gaps, and the policy direction, one hypothesis becomes both defensible and strategically compelling:

The United States is creating a sovereign, nationally controlled pathway to industrial-scale seabed minerals, and the company that can operationalize this pathway with legitimacy, environmental rigor, and commercial discipline will become the

anchor of the Western critical-minerals future.

The Cook Islands delay removes the most advanced Pacific EEZ competitor from the 2020s–early-2030s market. The ISA remains stalled. China continues to dominate refining and magnet production. The executive order activates the U.S. lane. NOAA is modernizing the rules. U.S. agencies are aligning around processing and supply-chain resilience.

In this landscape, U.S.-flag leadership is not an inevitability; it is a design challenge.

It will be won by the operator who understands:

- the legal complexity without oversimplifying it
- the geopolitical contest without being captured by it

- the environmental responsibility without weaponizing it, and
- the industrial requirements without underestimating them

What is clear is that the United States now has a pathway it did not have before 2025. For the first time, that pathway is credible enough to build upon—not hypothetically, but operationally.

A U.S.-flag program will not lead because the law is uncontested. It will lead because the strategy is sound.

**References**

1. Kraska, James. “The U.S. Executive Order on Seabed Mining.” *International Law Studies* 101 (2025).
2. United States. *Deep Seabed Hard Mineral Resources Act*, 30 U.S.C. §§ 1401–1474 (1980).
3. National Oceanic and Atmospheric Administration (NOAA), Office of Ocean and Coastal Resource Management. *DSHMRA Exploration Licenses USA-1 and USA-4: Extensions and Notices to Lessees*. Federal Register Notices, 1984–2027.
4. The White House. *Executive Order 14285: Unleashing America’s Offshore Critical Minerals and Resources*. April 24, 2025.
5. Congressional Research Service. *Critical Minerals and U.S. National Security: Policy, Supply Chains, and Offshore Options*. Washington, D.C., 2023–2025.
6. National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service. *Proposed Rule to Update DSHMRA Licensing and Consolidate Exploration and Commercial Recovery Review*. Washington, D.C., 2025.
7. International Seabed Authority. *Status of UNCLOS and ISA Membership*. Kingston, Jamaica, 2024–2025.
8. International Seabed Authority. *Draft Exploitation Regulations for Mineral Resources in the Area*. Kingston, Jamaica, 2019–2024.
9. Republic of Nauru. *Notification Pursuant to UNCLOS Annex I, Article 10 (“Two-Year Rule”)*. July 2021.
10. European Parliament. *Resolution on the International Seabed Authority*

- and Deep-Sea Mining*. Strasbourg, 2022–2024.
11. Lowy Institute. *Critical Minerals and the U.S. Bid to Bypass International Rules on Deep-Sea Mining*. Sydney, 2024.
12. Vinson & Elkins LLP. *Deep-Sea Mining: One International Regime to Rule Them All?* Houston, 2024.
13. Vinson & Elkins LLP. *Emerging Regimes for Offshore Minerals: NOAA’s Updated Rules for U.S. Licensing*. Houston, 2025.
14. United Nations. *United Nations Convention on the Law of the Sea (UNCLOS)*. 1982.
15. United Nations. *1994 Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea*. 1994.
16. International Law Commission. *Draft Conclusions on Identification of Customary International Law*. Geneva, 2018.
17. Greenpeace Aotearoa. *Cook Islands Seabed Mining Decision Delayed Following Local Opposition*. Auckland, 2025.
18. Pasifika Environews. *Cook Islands Delays Seabed Mining Decision, Extends Exploration to 2032*. Suva, 2025.
19. Reuters. *Japan to Begin Test Mining Rare-Earth Mud from Seabed in Early 2026*. Tokyo, 2025.
20. *Nature*. “Deep-Sea Mining: A Potential Solution to Secure Critical Minerals.” 2025.
21. ING Think. *How Rare Earths Became the Next Trade War Weapon*. Amsterdam, 2024.
22. Oxford Energy Institute. *China’s Rare Earths Dominance and Policy Responses*. Oxford, 2023.

23. United States Department of Defense and United States Department of Energy. *Strategic and Critical Materials Reports*. Washington, D.C., 2023–2025.
24. Associated Press. *America’s New Executive Order Spurs Seabed Mining Interest; TMC Explores U.S. Licensing Path*. New York, 2025.
25. Civil Society Briefings, International Seabed Authority Assembly and Council. *Positions of States Calling for a Precautionary Pause on Deep-Sea Mining*. 2023–2025.
26. United States Senate Committee on Foreign Relations. *Hearings on UNCLOS Non-Ratification and Implications for U.S. Seabed Mining*. Washington, D.C., 1983–2024.