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Sovereignty in the Depths: The Seabed as a New Strategic Domain

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Abstract:

The seabed has emerged as a new strategic domain where geopolitical, economic, technological, and environmental interests converge. This article presents a comparative analysis of the national strategies of France, the United States, China, and Spain regarding the deep sea, focusing on legal frameworks, technological capabilities, and sovereignty doctrines. Bartlett's strategic model is applied as a theoretical framework to evaluate coherence between ends, means, strategic environment, approaches, resource constraints, and risk. While France has adopted an integrated and forward-looking strategy, and China and the U.S. follow divergent yet deliberate paths, Spain shows a concerning gap between institutional discourse and actual capabilities. The study concludes with specific proposals for Spain to adopt a comprehensive approach, reinforcing state, scientific, and diplomatic action in an increasingly contested maritime domain.

Keywords:

Seabed, Sovereignty, Strategy, Ocean Governance, Bartlett.

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1. Introduction

In the 21st century, the seabed has become a strategic space of the highest order[1]. Beyond its traditional role as a physical boundary and resource for scientific research, it now represents a vital domain for energy security, technological autonomy, national defense, and environmental sustainability. The expansion of underwater mining, the installation of critical infrastructure (such as telecommunications cables, sensors, and pipelines), and the growing activity of autonomous underwater vehicles (AUVs) are clear signs of an international competition that is not only accelerating but also becoming more complex and multidimensional[2].



Figure 1 Conference on the seabed in Cartagena (Source: Fundación Círculo).

Since the entry into force in 1994 of the United Nations Convention on the Law of the Sea (UNCLOS), ocean space has been subject to a detailed regulatory framework that distinguishes between areas under state jurisdiction (such as the Exclusive Economic Zone or the continental shelf) and common areas beyond national jurisdiction, such as the so-called international seabed area, considered the common heritage of mankind.

[1] Armada (2023, November 15). Video of the conference *"El lecho marino, nuevo espacio de interés y disputa"*. Retrieved from https://www.youtube.com/live/VgF63tdNRKI?si=3GAnKdu8t7vj_xYr

[2] Fundación Círculo. (2025, February 26). *Video of the conference "El lecho marino, nuevo espacio de interés tecnológico"*. YouTube. Retrieved from https://www.youtube.com/watch?v=2jc2d2Kg2RI&t=7109s

This legal architecture, based on the consensus of the 1980s, is being strained by new political and technological realities[3].

In April 2025, this tension reached a new milestone with the signing of a new executive order by the President of the United States, de facto authorizing underwater mining in international waters without the endorsement of the International Seabed Authority (ISA), the body created by UNCLOS to regulate such activities[4]. Although the United States is not a party to the Convention, it had until now respected its provisions as customary law. This unilateral decision has not only triggered a chain reaction among state and non-state actors but has also accelerated efforts to finalize a long-stalled international mining code.

Faced with this situation, some states have adopted clear and operational strategies. France, for example, approved in 2022 the "Stratégie ministérielle de maîtrise des fonds marins" (Ministerial Strategy for Control of the Seabed), to achieve full intervention capacity at a depth of 6,000 meters by 2030[5]. This strategy integrates civil and military resources, observation and defense capabilities, and a long-term vision of ocean governance. The depth of its technical ambition is based on a robust industrial ecosystem, institutions such as the SHOM (Hydrographic and Oceanographic Service of the Navy), and a proactive international cooperation network[6].

In contrast, Spain is at a certain strategic disadvantage. Despite having one of the largest exclusive economic zones (EEZ) in Europe and significant geopolitical interests in the Atlantic, we lack a coherent national strategy for the seabed and the means to monitor it. The "National Maritime Security Strategy 2024" (ENSM-2024) barely mentions the ocean floor, and Spain's position has so far focused on environmental protection, which, although legitimate, is not accompanied by technological capabilities or operational presence[7].

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[3] Hache, E., Normand, E. y Roche, C. (2024). Exploiter les fonds marins: une nouvelle frontière géopolitique? *Revue internationale et stratégique*, 136(4), 173-183.

[4] The Economist (2025, April 25). *A Trump executive order will unleash a global deep-sea mining boom*. Retrieved from https://www.economist.com/international/2025/04/25/a-trump-executive-order-will-unleash-a-global-deep-sea-mining-boom

[5] Marine Nationale (2023, December 1). *Objectif: -6000 mètres: préparer les capacités nécessaires à notre ambition*. *Cols Bleus*. Retrieved from https://www.colsbleus.defense.gouv.fr/fr/objectif-6000-metres-preparer-les-capacites-necessaires-notre-ambition

[6] Saliou, V. (2023). Les grands fonds marins: nouveaux espaces de conflictualités. *Revue Défense Nationale*, 862(7), 65-70.

[7] Conte de los Ríos, A. (2023, November 28). El lecho marino, nuevo espacio de interés y disputa. *Revista Ejércitos*. Retrieved from https://www.revistaejercitos.com/focus/seguridad-maritima/el-lecho-marino-nuevo-espacio-de-

The need to rethink this position is all the more urgent given the growing economic value of the seabed. The so-called "new underwater gold rush" is explained by the abundance of critical minerals in the oceanic crust: nickel, cobalt, manganese, rare earths, and copper, which are essential for the supply chains of strategic technologies such as batteries, wind turbines, electric vehicles, and long-range missiles[8]. The depletion or insecurity of land-based sources—exacerbated by China's dependence on the refining of these minerals—has multiplied interest in mining in the Clarion-Clipperton fracture, where the ISA has already granted more than 30 exploration concessions to companies and states[9].

In addition to its economic importance, the seabed has significant implications for defense. Control of the ocean floor is essential to ensure the integrity of underwater infrastructure such as communication cables, whose alteration or sabotage can have systemic effects. Although we rule out the deployment of nuclear weapons of mass destruction, it does allow for the deployment of acoustic systems for the detection of strategic nuclear submarines, as well as the installation of seismic early warning sensors[10].

This military dimension, although more opaque, is present in the doctrines of powers such as China, Russia, and the United States, which recognize the strategic nature of underwater infrastructure. In recent years, the sabotage of the Nord Stream gas pipelines, Houthi threats against cables in the Red Sea, investigations into damage to connections between Finland and Estonia, and several deliberate cuts to communications cables have highlighted their vulnerability and the urgent need to improve their protection[11].

At the multilateral level, the entry into force of the new Treaty on Marine Biodiversity in Areas Beyond National Jurisdiction (BBNJ) adds an additional layer of regulation[12]. This

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interes-y-disputa/

[8] NOAA (2025, April 25). *'The next gold rush': President Trump unlocks access to critical deep seabed minerals*. Retrieved from https://www.noaa.gov/news-release/next-gold-rush-president-trump-unlocks-access-to-critical-deep-seabed-minerals

[9] Conte de los Ríos, A. (2024, July 25). Minería submarina: Nuevo espacio de conflicto. *Revista Ejércitos*. Retrieved from https://www.revistaejercitos.com/focus/mineria-submarina/

[10] Naciones Unidas (1971). *Tratado sobre la prohibición de emplazar armas nucleares y otras armas de destrucción en masa en los fondos marinos y oceánicos y su subsuelo* (A/RES/2660(XXV).

[11] Bashfield, S. (2024). *Defending seabed lines of communication. Australian Journal of Maritime & Ocean Affairs*. Advance online publication

[12] Conte de los Ríos, A. (2023, April 8). *El Tratado de Alta Mar y la protección de la biodiversidad marina*. Global Strategy. Retrieved from https://global-strategy.org/el-tratado-de-alta-mar-y-la-proteccion-de-la-biodiversidad-marina/

instrument aims to protect biodiversity in the high seas through tools such as marine protected areas, environmental impact assessments, and the equitable sharing of benefits derived from marine genetic resources. Its implementation raises questions about how to balance conservation with access to strategic resources, and which actors will have the real capacity to comply with and enforce its provisions[13].

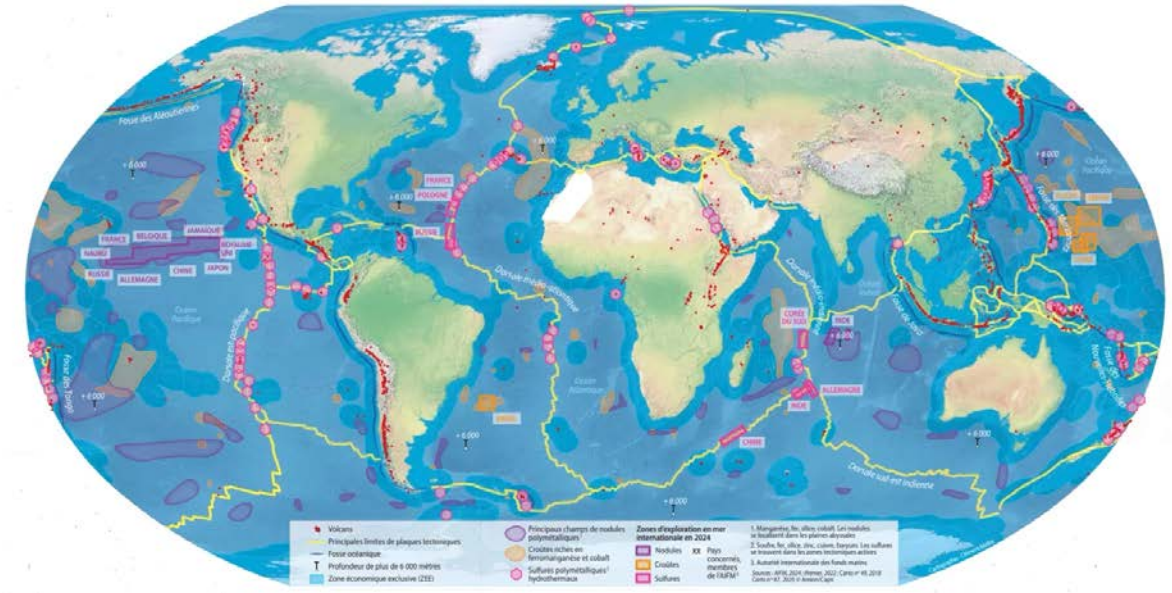


Figure 2 Status of underwater mining worldwide (Source: Diplomatie).

In a context of rapid change, this paper explores the legal framework governing the seabed and analyzes how different powers are positioning themselves in this new strategic space. Based on a comparison of national approaches, it identifies gaps, opportunities, and best practices that can be used to draw up a proposal for Spain. The premise is clear: those who do not actively participate in the seabed will be left out of the geopolitical game in the 21st century.

2. International legal framework: governance, conflicts, and new rules

The legal basis governing activities in the world's oceans is UNCLOS, adopted in 1982 and in force since 1994. This convention establishes the legal architecture of maritime spaces and clearly delimits the sovereign powers of states over internal waters, the territorial sea (up to 12 nautical miles), the contiguous zone (12 to 24 miles), the EEZ (up

[13] Stehelin, T. (2023). La négociation de l'accord sur la biodiversité en haute mer (BBNJ) dans la fabrique multilatérale de la gouvernance financière d'un bien commun. *Revue d'économie financière*, 151(3), 277-289.

to 200 miles), and the continental shelf (which may extend up to 350 nautical miles in specific cases)[14].

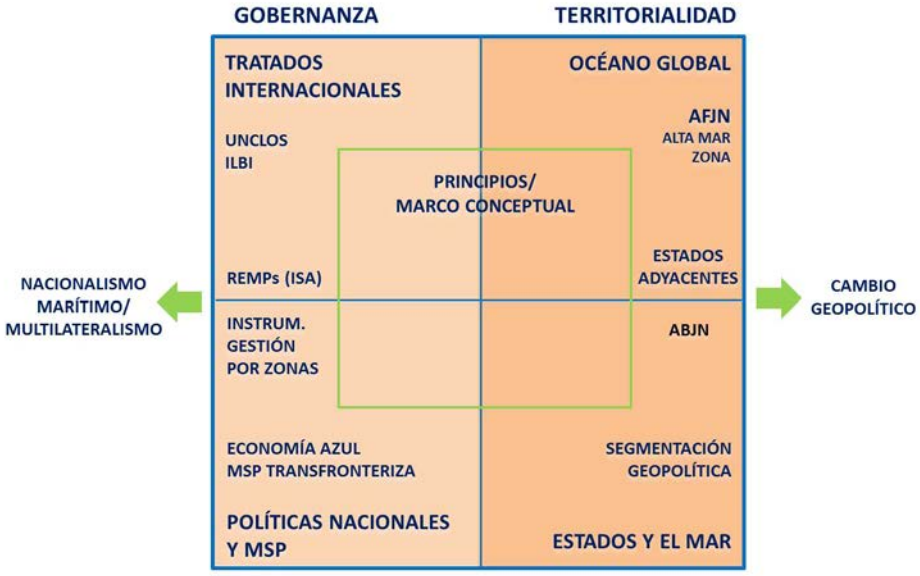


Figure 3 State of ocean governance (Source: Suárez-Vivero).

Beyond these limits lies the Zone, which encompasses the seabed and its subsoil beyond national jurisdiction. This Zone was declared the "common heritage of mankind" in Article 136 of UNCLOS, and its exploration and exploitation may only be carried out "for the benefit of mankind as a whole" (Article 140). To administer this space, the Convention created the ISA, based in Kingston, Jamaica[15].

The creation of the ISA was one of the most innovative elements of the Montego Bay regime. Its mission is to organize, regulate, and control all activities related to mineral resources on the ocean floor in the Area. Since 1994, the ISA has adopted a progressive approach: it first established an exploration regime based on long-term contracts of up to 15 years, without yet moving towards a definitive legal framework regulating commercial exploitation. To date, the ISA has signed 31 exploration contracts, distributed among **N** polymetallic nodules (19), **S** polymetallic sulfides (7), and **C** cobalt-rich crusts (5), in areas such as the Clarion-Clipperton fracture, the central Indian Ocean, the Mid-Atlantic Ridge,

[14] Ibáñez Gómez, F. (Coord.). (2025). *Seguridad marítima: nuevos retos*. CISDE Editorial.
[15] Suárez de Vivero, J. L. (2023, June 14–16). *Áreas marinas fuera de la jurisdicción nacional, geopolítica y relaciones internacionales*. Congreso DEEPMED. Retrieved from https://www.youtube.com/watch?v=XwG8_GRs8VE

and the western Pacific Ocean[16].

The contracts are distributed among state-owned companies, public-private consortia, and scientific institutions backed by States Parties. The main players include China, Russia, Japan, France, Germany, South Korea, and India. France, for example, is actively involved through IFREMER (French Research Institute for Exploitation of the Sea), one of the world's most advanced oceanographic institutes.

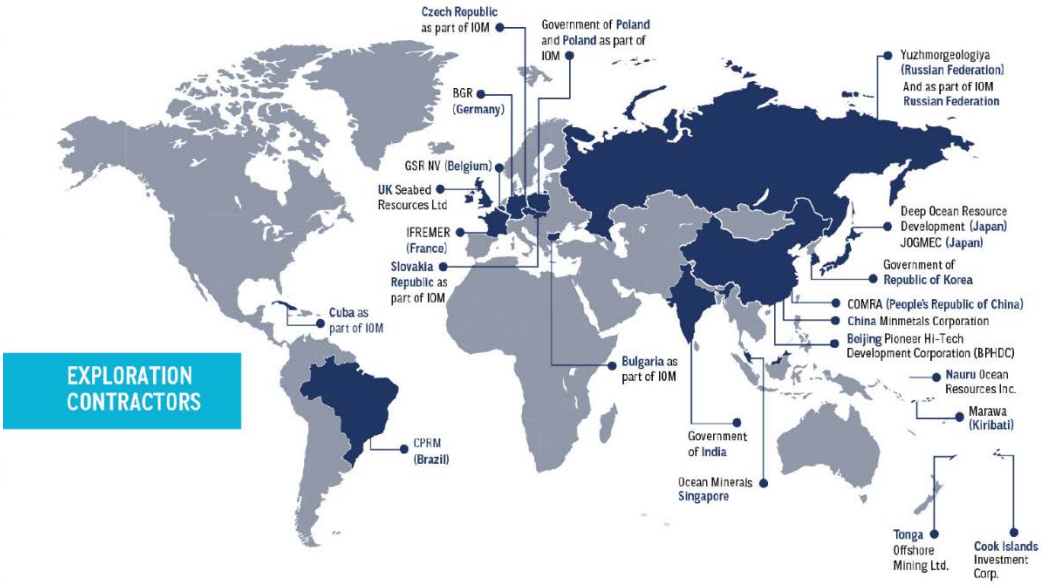


Figure 4 Countries with seabed exploration contracts (Source: ISA).

For polymetallic nodules, each contractor is allocated an area of 75,000 square kilometers; for polymetallic sulfides, the area is 10,000 square kilometers divided into 100 blocks, each no more than 100 square kilometers; and for cobalt-rich ferromanganese crusts, the authorized area is 100,000 square kilometers. 000 square kilometers divided into 100 blocks, each no larger than 100 square kilometers; and for cobalt-rich ferromanganese crusts, the authorized area is 3,000 square kilometers, divided into 150 blocks no larger than 20 square kilometers each.

The ISA is under intense pressure. While companies and promoting countries are demanding progress toward commercial exploitation, other actors—such as France, Spain, Germany, and Canada—have called for a moratorium or precautionary pause until conclusive scientific studies on the environmental impact of these operations are

[16] Conte de los Ríos, Augusto (2024b). La minería submarina nuevo espacio de conflictos. *Revista Ejércitos*. Retrieved from https://www.revistaejercitos.com/focus/mineria-submarina

available.

Table 1 ISA Exploration Concessions (Source: ISA).

ISA concessions		CONTRACTS			
	Contractor	**N**	**S**	**C**	**Total**
1	Interoceanmetal Joint Organization	1			1
2	JSC Yuzhmorgeologiya	1			1
3	Government of the Republic of Korea	1	1	1	3
4	China Ocean Mineral Resources Research and Development Association	1	1	1	3
5	Deep Ocean Resources Development Co. Ltd.	1			1
6	French Research Institute for Exploitation of the Sea	1	1		2
7	Government of India	1	1		2
8	Federal Institute for Geosciences and Natural Resources	1	1		2
9	Nauru Ocean Resources Inc.	1			1
10	Tonga Offshore Mining Limited	1			1
11	Global Sea Mineral Resources NV	1			1
12	Loke CCZ (formerly UK Seabed Resources Ltd.)	2			2
13	Marawa Research and Exploration Ltd.	1			1
14	Ocean Mineral Singapur Pte. Ltd.	1			1
15	Cook Islands Investment Corporation	1			1
16	China Minmetals Corporation	1			1
17	Beijing Pioneer Hi-Tech Development Corporation	1			1
18	Ministry of Natural Resources and Environment of the Russian Federation		1	1	2
19	Government of Poland		1		1
20	Japan Organization for Metals and Energy Security			1	1
21	Companhia de Pesquisa de Recursos Minerais S.A.			1	1
22	Blue Minerals Jamaica Ltd	1			1
	TOTAL	**19**	**7**	**5**	**31**

The United States has not ratified UNCLOS but has historically respected its provisions as part of customary international law. Furthermore, in April 2025, President Donald Trump signed an executive order authorizing deep-sea mining without ISA approval. This decision breaks with the principle that activities in the Zone must be carried out under multilateral supervision and represents a de facto challenge to the international ocean governance system.

The order is not limited to the US EEZ but seeks to authorize operations beyond national jurisdiction. In addition, it directs federal agencies such as NOAA (National Oceanic and Atmospheric Administration) and the Department of Defense to work to secure licenses and industrial capabilities to allow the exploitation of critical minerals (nickel, cobalt, manganese, etc.) on the ocean floor. The argument invoked is national security and

reducing dependence on China in the supply chain.

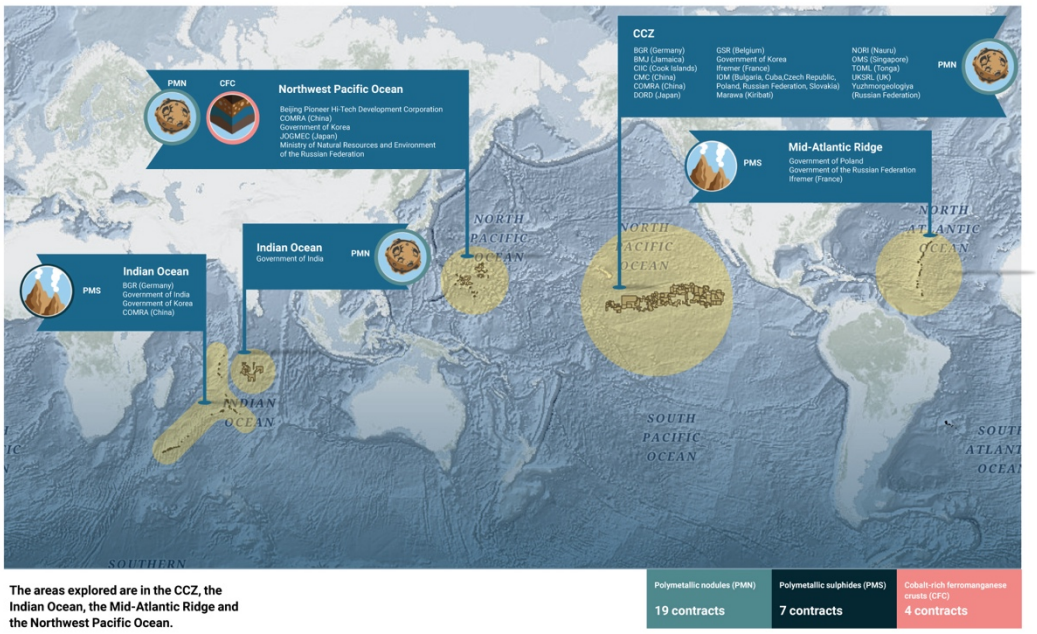


Figure 5 Map of ISA concessions (Source: ISA).

This decision has generated a strong international reaction. France denounced that "the abyss is not for sale," while the European Union recalled that UNCLOS rules are binding even on non-signatory countries, insofar as they form part of customary international law[17]. China, for its part, accused the United States of violating international law, despite its own contradictory record in the South China Sea.

Paradoxically, the executive order has prompted a movement within the ISA itself: its secretary general, Leticia Carvalho, told The Economist that the US measure has galvanized the 169 member states to speed up the adoption of the "Mining Code," which could be ready before the end of 2025[18].

The "Mining Code" is the regulatory framework developed by the ISA to regulate the prospecting, exploration, and exploitation of mineral resources in the Area, i.e., the seabed and its subsoil beyond the limits of national jurisdiction, under UNCLOS[19].

[17] Hodgson, R. (2025, April 28). European Commission questions legality of US seabed mining plans. *Euronews*. Retrieved from https://www.euronews.com/my-europe/2025/04/28/european-commission-questions-legality-of-us-seabed-mining-plans

[18] The Economist (2025, April 25). *A Trump executive order will unleash a global deep-sea mining boom*. Retrieved from https://www.economist.com/international/2025/04/25/a-trump-executive-order-will-unleash-a-global-deep-sea-mining-boom

[19] ISA (2012). *Autoridad Internacional de los Fondos Marinos: Textos básicos* (2.ª ed.). Kingston, Jamaica.

Currently, the code includes three specific exploration regulations—for polymetallic nodules, polymetallic sulfides, and cobalt-rich ferromanganese crusts—as well as technical recommendations for contractors and sponsoring states. Since 2014, the ISA has been working on drafting exploitation regulations that seek to reconcile economic development with rigorous protection of the marine environment. This instrument, still under deliberation by the ISA Council, will be legally binding and will define the conditions for future access to mineral resources in the Area[20].

Adding to this picture is a new instrument: the *Treaty on Marine Biodiversity in Areas Beyond National Jurisdiction*, or BBNJ, adopted by the UN in 2023. Although it has not yet entered into force, as it requires at least 60 ratifications, it represents a qualitative change in ocean governance.

The BBNJ establishes mechanisms for:

- The creation of marine protected areas in the high seas.
- The mandatory conduct of environmental impact assessments for activities that may significantly affect biodiversity.
- Fair access to and sharing of benefits derived from marine genetic resources.
- The transfer of marine technology and capacity building in developing countries.

The treaty aims to close a legal loophole in the Montego Bay regime, which regulates the seabed—the so-called Zone—but not the overlying waters, i.e., the water column on the high seas. By incorporating principles of environmental justice, scientific cooperation, and equity, the BBNJ aims to become a regulatory counterweight to dominant exploitative trends, thereby correcting one of the main omissions of UNCLOS[21].

While the ISA governs the seabed, the BBNJ introduces an ecosystem-based and integrated approach to the water column. Like the ISA, the new treaty establishes an authority to implement and oversee the BBNJ. France has been one of its main drivers; Spain has shown political support, albeit with less prominence. The United States, in line with its sovereign approach, has remained on the sidelines.

[20] ISA (2021). *Mining Code: Regulations for exploitation (draft)*. Retrieved from https://www.isa.org.jm/the-mining-code/draft-exploitation-regulations-2/

[21] Carro Pitarch, M. (2023). El "Acuerdo BBNJ": Hacia un nuevo régimen para la conservación y el uso sostenible de la diversidad biológica marina en zonas fuera de la jurisdicción nacional. *Revista Española De Derecho Internacional*, *75*(2), 231-256.

In this case, the BBNJ is a legally binding international instrument (ILBI) within the framework of UNCLOS, whose objective is to conserve and sustainably use marine biodiversity in areas beyond national jurisdiction. It comes in response to over-exploitation and lack of regulation in these areas and focuses on four key pillars: marine genetic resources, spatial management tools (such as marine protected areas), environmental impact assessments, and cooperation for capacity building and technology transfer.

The convergence of these instruments—UNCLOS, ISA, BBNJ—should constitute a comprehensive, coherent, and robust regime for deep ocean governance. In practice, the system has structural tensions that reflect an unresolved struggle between legal universalism and extractive sovereignty. The logic of the common heritage faces the logic of preferential access. Multilateral cooperation is hampered by national agendas that prioritize short-term strategic and economic interests. Added to this are unprecedented technological challenges: the expansion of underwater artificial intelligence, autonomous sensors, genetics, and telecommunications cables with self-correcting and sabotage-resistant capabilities. These advances go beyond the current legal framework and require a thorough review of the classic concepts of the law of the sea.

These are instruments without effective enforcement mechanisms, and their financial dependence on some of the main actors undermines their technical independence. In this scenario of fragmented governance, the protection of the seabed as a global common good is at a crossroads: move towards a robust multilateral regime based on equity, scientific knowledge, and the precautionary principle, or allow a “first come, first served” logic to prevail, with profound legal, environmental, and geopolitical implications. The law of the sea, conceived in Montego Bay as a progressive response to the 20th century, is now being tested by the challenges of a new century.

3. Spain

Spain has historically been a maritime nation, but the continuity between tradition and strategy has not always been linear[22]. In the specific area of the seabed, Spain's institutional track record reveals more absences than definitions, more declarative principles than material capabilities, and more environmental rhetoric than real strategic

[22] Bordeje y Moreno, F. (1978). *Vicisitudes de una política naval*. Editorial San Martín.

presence. A comparison between the "National Maritime Security Strategy 2013" (ESNM-2013) and its successor, the "National Maritime Security Strategy 2024" (ENSM-2024), clearly shows this evolution but also reveals some disappointment[23].

With regard to the ocean floor as a strategic dimension, Spain's progress remains purely symbolic, despite growing recognition of its importance in economic, geopolitical, and military terms. The main weakness of the Spanish strategy lies in its limited operational applicability, which condemns it to sterile continuity, sustained by overly general objectives, rhetorical statements, and, in many cases, goals that are difficult to achieve in an institutional environment marked by fragmentation, a narrow, short-term vision, and a compartmentalized approach.

Two particularly serious omissions can be highlighted. First, the absence of a determined political and operational will to promote effective integration and real rationalization of the maritime security system. Second, the lack of a specific budget allocation to support strategic projects based on parameters of efficiency, sustainability, and interoperability. These structural deficiencies hinder any possibility of achieving true unity of action, perpetuating an uncoordinated and ineffective model that contrasts with the proactivity and strategic cohesion observed in other international actors[24].

The ESNM-2013 was, at the time, a regulatory milestone of considerable importance. It was the first national maritime strategy adopted within the European Union, and not by chance: Spain already had one of the largest EEZs on the continent and faced governance challenges in areas spread across two continents and several seas. The strategy was based on a comprehensive vision of the maritime domain as a global and shared space and identified a series of national interests ranging from the protection of maritime trade to the surveillance of sovereign spaces and the response to hybrid threats. The approach was conceptually ambitious but limited in its operational implementation.

One of the most striking shortcomings of the ESNM-2013 was the absence of a specific and articulated treatment of the seabed as a strategic space. Although there were already clear indications of the value of mineral resources on the ocean floor and the growing

[23] Notario Ezquerra, A. (2024). Hacia una nueva Estrategia Nacional de Seguridad Marítima. En F. Ibáñez Gómez (Coord.), *Seguridad marítima: una incertidumbre permanente* (pp. 69–100). J.M. Bosch

[24] García Sánchez, F. (2024). Estrategia de Seguridad Marítima Nacional 2024 (ESMN 24). *Cuadernos de Pensamiento Naval*, *24*(38), 11–26.

importance of underwater infrastructure (cables, sensors, and pipelines), the document barely addressed these issues, diluting them in generalities about the marine environment or the security of critical infrastructure. This gap was paradoxical considering that, at that time, France had already begun to outline a strategy for controlling the seabed, and China was starting to operate vehicles capable of reaching depths of 3,500 meters.

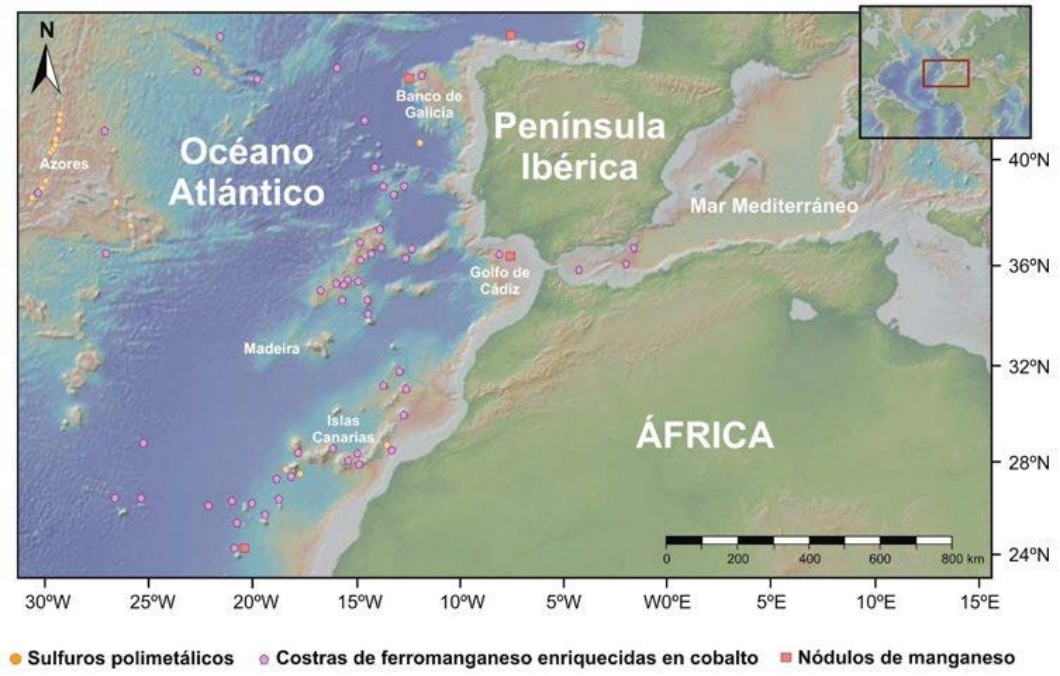


Figure 6 Underwater mineral deposits in Spanish waters (Source: IGME).

Another limitation of the ESNM-2013 was the geographical vagueness of its areas of interest. Although it was an important step in establishing a strategic doctrine for the state's maritime action, it failed to clearly define the areas where this strategy was to be implemented. This ambiguity proved particularly problematic in sensitive areas such as the Canary Islands, where the lack of firm maritime boundaries with Morocco—around Mount Tropic—has led to tensions and legal uncertainty. Added to this is the lack of indigenous technological capabilities for surveillance and exploitation of the seabed, which has kept Spain in a situation of dependence and vulnerability that still persists[25].

The new “National Maritime Security Strategy 2024,” approved after a participatory

[25] Orihuela Calatayud, E. (2019). Delimitaciones pendientes y seguridad marítima: ¿un dúo incompatible? En R. García Pérez y I. Lirola (Eds.), *Estrategia de seguridad marítima de España: Una agenda de actualización* (pp. 89–115). Tirant lo Blanch

process involving various departments, including the CNI and independent experts, attempted to update the diagnosis in light of a more volatile geostrategic environment[26]. Unlike its predecessor, the ENSM-2024 explicitly recognizes that the seabed harbors natural resources—both living and non-living—whose exploitation is becoming increasingly important from a geostrategic perspective. Added to this wealth is the ecological value of the seabed, which makes this space a key component of national security, sustainable economic development, and environmental protection.

Among the priorities identified, the surveillance and protection of critical underwater infrastructure, such as telecommunications cables, gas pipelines, and energy connections, stands out. Their vulnerability to sabotage, cyberattacks, or accidents is an explicit concern of the strategy, which calls for strengthening detection and response capabilities.

The strategy also reaffirms Spain's position in favor of a “precautionary pause” on mining in the international seabed area, recognized as the common heritage of mankind. Within this framework, Spain is committed to promoting, within the ISA, decisions aligned with the precautionary principle and environmental sustainability.

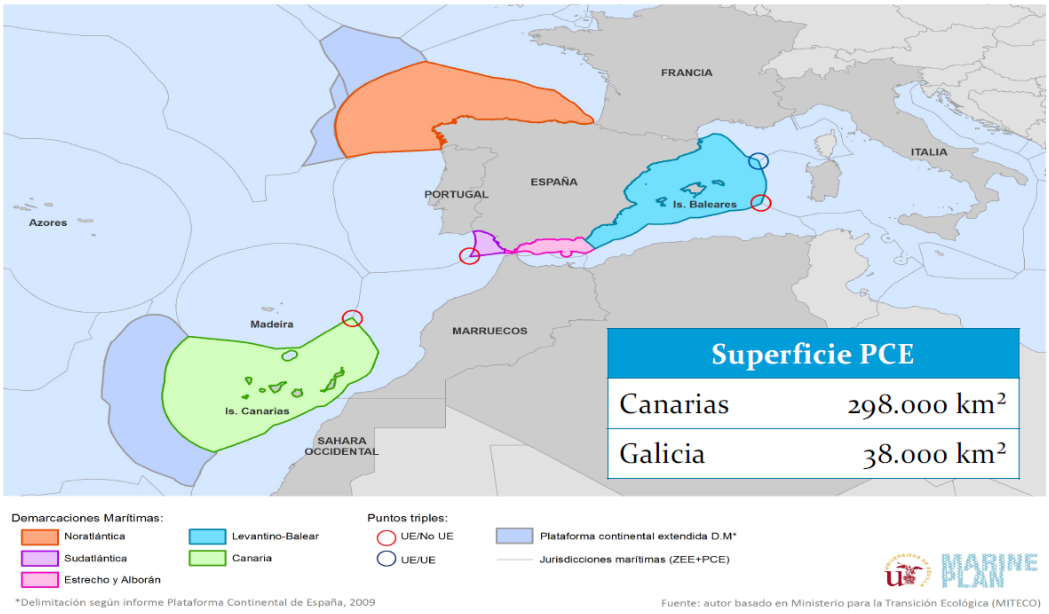


Figure 7 Spanish maritime boundaries (Source: Suárez-Vivero).

The ESNM-2024 also highlights the need to strengthen national capacities for

[26] Notario Ezquerro, A. (2024). Hacia una nueva Estrategia Nacional de Seguridad Marítima. En F. Ibáñez Gómez (Coord.), *Seguridad marítima: una incertidumbre permanente* (pp. 69–100). J.M. Bosch

observation, exploration, and surveillance of the seabed. To this end, it proposes the development of new intervention systems, advanced sensors, underwater vehicles (manned and unmanned), and oceanographic platforms adapted to security and scientific research missions.

It also establishes as a priority objective to advance campaigns to extend the Spanish continental shelf, with special attention to areas west of the Canary Islands, Galicia, the Bay of Cádiz, and the Bay of Biscay. This effort will require coordinated action at the technical and diplomatic levels in order to safeguard sovereign interests over the extended seabed.

This conceptual evolution has not yet been translated into a concrete capability plan. The document remains, to a large extent, a discursive rather than an operational framework. No specific objectives are specified in terms of seabed control, nor are any associated investments or technological plans defined. The seabed is referred to in generic terms, as part of the blue economy or the environment. There is no clear mention of developing means of intervention, in contrast to France, whose 2022 strategy sets a national objective of full control of 6,000 meters by 2030.

As Fernando Ibáñez points out in his maritime studies, the international scene is now immersed in renewed competition between major powers[27]. In this new strategic environment, events have occurred that compromise global stability. The most common threat today—responsible for between 150 and 200 annual failures of submarine cables—is accidental physical damage caused by fishing vessels and merchant ships, usually due to incidents with their anchors. The limited capacity of many states to monitor and control their maritime spaces also facilitates the expansion of illicit activities[28].

Despite this, there are specific initiatives that deserve to be highlighted. Spain has promoted the construction of the BAM-IS, a maritime intervention vessel developed by Navantia, which is expected to enter service in 2027. This unit will be used to protect underwater infrastructure, carry out scientific missions, and participate in cable rescue or repair operations. This is undoubtedly a step in the right direction, but it is totally insufficient given the size of our EEZ and the growing geopolitical challenges surrounding

[27] Ibáñez Gómez, F. (Coord.). (2024). *Seguridad marítima: Una incertidumbre permanente* (Pról. M. Á. Ballesteros Martín). J.M. Bosch.
[28] Ibáñez Gómez, F. (Coord.). (2025). *Seguridad marítima: Nuevos retos*. CISDE Editorial.

the central-eastern Atlantic. The delay in its implementation, combined with the absence of a national technological ecosystem associated with seabed control, highlights disconnect between diagnosis and action.

At the international level, our position has been marked by the defense of the precautionary principle. Spain, in line with the European Union, has advocated a temporary moratorium on commercial exploitation of the seabed until sufficient scientific data on its environmental impact is available. This position, which is reasonable from an environmental and scientific point of view, has not been accompanied by a strategic vision of what capabilities we need to develop to protect our interests should the moratorium be lifted or the ISA licensing process be accelerated. Spain's entry into the ISA Council in 2023 was an important milestone in diplomatic terms, but it must be translated into technical presence, regulatory influence, and operational capacity. Otherwise, Spain risks remaining a mere observer on a board where others already have the advantage.

The absence of this vision is also reflected in the lack of coordination between defense, science, and industry. While France integrates its naval capabilities, scientific institutions such as IFREMER, and strategic industry into a common strategy, Spain lacks something equivalent. There is no specific national center for research and development of seabed intervention technologies, nor is there a plan for sustained investment in sensors, underwater propulsion, or artificial intelligence applied to the bathymetric environment. Nor is there any apparent integration of these issues into military planning or the priorities of the Ministry of Science, Innovation, and Universities.

In addition, Spain faces growing pressure in its maritime neighborhood. Morocco's unilateral expansion of its continental shelf around Cape Tropic, rich in tellurium and other strategic minerals, is a serious warning. The lack of clear delimitation of maritime spaces in this area creates a legal gray zone that can be exploited by more determined actors. Without surveillance capabilities, intervention capacity, or a firm diplomatic stance, Spain is exposed to a fait accompli.

In a context of growing competition for resources and technological control, the absence of a national strategy for the seabed is not only a technical shortcoming but also a strategic vulnerability. The ESNM-2024 is committed to multilateralism, but in times of

crisis, as demonstrated by the cable cut in Cuba in 1898[29], we must guarantee our strategic autonomy by firmly defending our interests, combining international cooperation with our own means of surveillance, intervention, and protection of the seabed.



Figure 8 Section of the cable between Santiago and Guantanamo (Source: Atlantic-Cable).

Underwater mining, data cables, surveillance networks, and sensors are now part of the new map of power. Spain cannot limit its position to a rhetorical defense of the environment: sustainability is not at odds with strategy. On the contrary, without our own resources, we will not even be able to guarantee that environmental protection is enforced in our own waters.

In the last decade, there have been conceptual advances in Spain's maritime vision, but there is still a clear weakness in terms of resources. There is an urgent need for a specific strategy for the seabed that integrates scientific, technological, and defense capabilities, is based on a clear mapping of our interests, and is supported by active diplomacy in forums such as the ISA or the BBNJ. Only then will we be able to protect what is already part of the geopolitical chessboard: our seabed.

[29] These plans to cut communications dated back to 1896. Kimball, W. W. (1896, June 1). *Plan of operations against Spain*. U.S. Navy, Staff Intelligence Officer. Newport. Retrieved from https://www.history.navy.mil/content/history/nhhc/research/publications/documentary-histories/united-states-navy-s/pre-war-planning/plan-of-operations-a.html

4. United States

The United States has always had an ambivalent relationship with international law. Although it was one of the driving forces behind UNCLOS, it never ratified it. The defense of sovereignty against multilateral frameworks perceived as restrictive has outweighed international consensus. Although 170 countries—including all of its main allies—support the treaty, Washington remains on the sidelines. What was once presented as strategic autonomy is now perceived as a renunciation of influence over the rules governing the seabed[30].

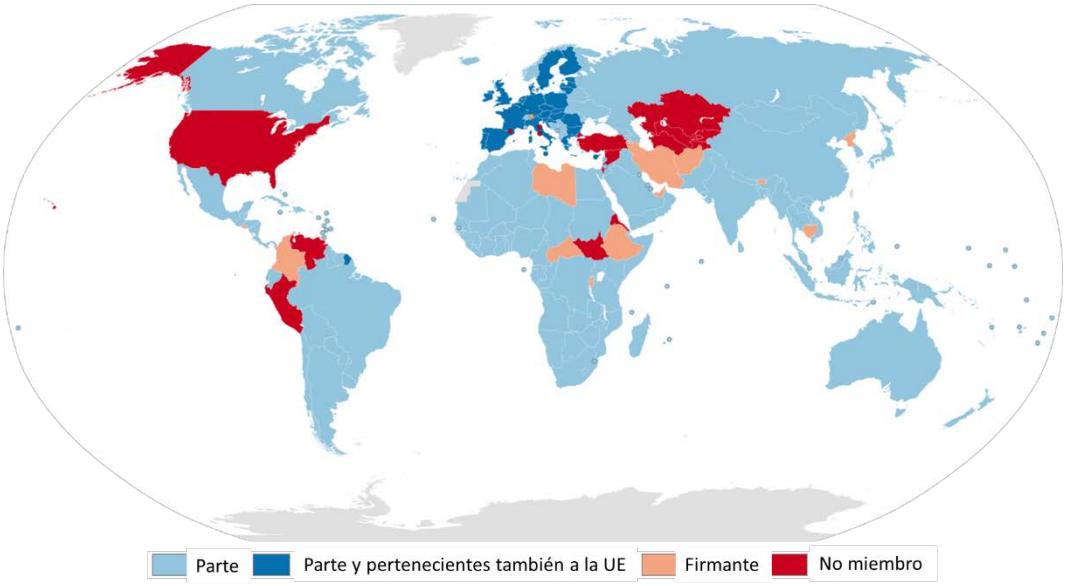


Figure 9 States party to UNCLOS (Source: Wikimedia).

The United States is also the country with the largest EEZ on the planet, ahead of even France. Its maritime reach extends across the Atlantic, the Pacific, the Arctic, and its island possessions in the Caribbean and the Western Pacific. Until recently, this geographical advantage has not translated into a coherent policy towards the seabed. The traditional US doctrine has been to reject any external authority—such as that of the ISA—that limits free access to ocean floor resources, especially in areas beyond national jurisdiction. This position was consolidated with the Deep Seabed Hard Mineral Resources Act of 1980 (DSHMRA), which establishes a unilateral regime to authorize

[30] Stevenson, J. R. & Oxman, B. H. (1994). *The future of the United Nations Convention on the Law of the Sea*. University of Miami Law School.

deep-sea mining on the high seas, outside the ISA[31].

This position has been ideologically reinforced by think tanks that have argued for decades that ratifying UNCLOS would imply a surrender of sovereignty, the acceptance of regulatory impositions, and the payment of royalties to corrupt regimes in developing countries[32]. According to this view, customary law already guarantees the United States the rights necessary to operate on the high seas, and submitting to the ISA regime would entail unnecessary bureaucratic burdens and a surrender of strategic interests. This ocean nationalism is also fueled by the rejection of other international treaties and an instrumental conception of multilateralism, where cooperation is only accepted if full control and autonomy are maintained[33].

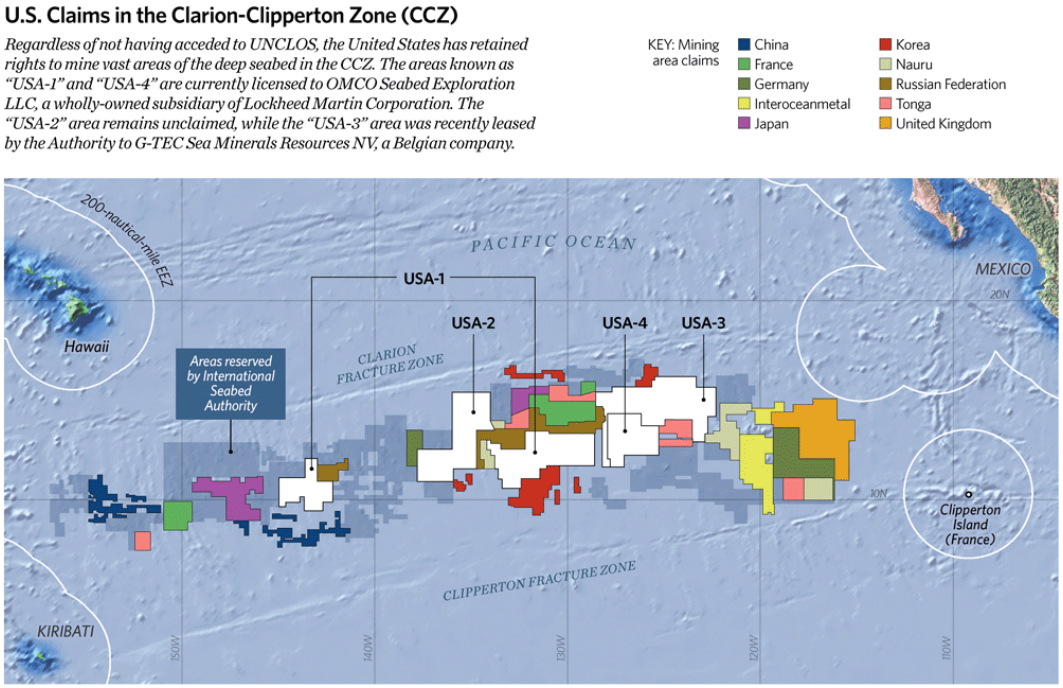


Figure 10 US claims in Clarion-Cliperton (Source: Heritage).

However, in 2025, a paradigm shift has taken place. The signing of an executive order by President Donald Trump on April 24 marks a historic turning point[34]. It formally authorizes

[31] Keating-Bitonti, C. (2025, April 25). *Seabed mining in areas beyond national jurisdiction: Issues for Congress* (CRS Report No. R47324). Congressional Research Service. Retrieved from https://crsreports.congress.gov/product/pdf/R/R47324

[32] Groves, S. (2022, June 13). *Should the U.S. ratify the U.N. Convention on the Law of the Sea?* The Heritage Foundation. Retrieved from https://www.heritage.org/global-politics/commentary/should-the-us-ratify-the-un-convention-the-law-the-sea

[33] Groves, S. (2012, December 4). *The U.S. can mine the deep seabed without joining the U.N. Convention on the Law of the Sea*. The Heritage Foundation. Retrieved from https://www.heritage.org/report/the-us-can-mine-the-deep-seabed-without-joining-the-un-convention-the-law-the-sea

[34] The White House (2025, April 24). *Unleashing America's offshore critical minerals and resources* [Presidential

underwater mining by US companies in both the EEZ and international waters, without requiring ISA approval. The text leaves no room for doubt: The United States recognizes its strategic interest in securing the supply of critical minerals, such as nickel, cobalt, manganese, copper, rare earths, and titanium, to ensure its national security and technological autonomy. In addition, it explicitly invokes the need to reduce dependence on "foreign adversaries," an implicit reference to China, which dominates the global market for processing these materials.

The executive order establishes mechanisms to accelerate the granting of licenses under the DSHMRA framework and prioritizes the mapping, exploration, and exploitation of areas with high potential, both within the US outer continental shelf and on the high seas. It also mobilizes the Departments of Defense, Energy, and Commerce to coordinate a national effort that includes strengthening the supply chain, financing industrial capabilities, and strategic storage of seabed minerals.

This move, which has been described by some media outlets as a "new gold rush," has had a seismic impact on the international system. France, the European Union, China, and other actors have openly denounced it as a violation of international law. The French ambassador for the oceans was blunt: "The abyss is not for sale"[35]. ISA Secretary-General Leticia Carvalho has reaffirmed that the United States has no authority to grant licenses outside its national jurisdiction and that the only legal way to exploit resources in the Zone is through the ISA. At the same time, she acknowledged that the order has served as a catalyst: after years of paralysis, ISA member states have accelerated work to approve the mining code before the end of 2025[36].

This episode not only highlights the rift between customary law and institutional law but also underscores the geo-economic ambitions of the United States in the face of its own regulatory contradictions. Although Washington has argued that its interests are better protected outside the system, the truth is that, as a non-party to UNCLOS, it has no say

action, Executive order]. Retrieved from https://www.whitehouse.gov/presidential-actions/2025/04/unleashing-americas-offshore-critical-minerals-and-resources/

[35] Petit, C. (2025, April 29). *Extraction minière: "Les abysses ne sont pas à vendre" selon l'ambassadeur français des enjeux maritimes.* AFP (1ere). Retrieved from https://la1ere.francetvinfo.fr/guadeloupe/extraction-miniere-les-abysses-ne-sont-pas-a-vendre-selon-l-ambassadeur-francais-des-enjeux-maritimes-1581998.html

[36] Reis de Carvalho, L. (2025, April 30). *Statement on the US Executive Order: "Unleashing America's offshore critical minerals and resources"*. International Seabed Authority. Retrieved from https://www.isa.org.jm/news/statement-on-the-us-executive-order-unleashing-americas-offshore-critical-minerals-and-resources/

in the development of binding rules that will affect global activity. This exclusion leaves it in a legally weak and diplomatically isolated position, as experts such as Bernard Oxman and John Stevenson warned years ago when they advocated ratification precisely to avoid this type of regulatory collision[37].

Furthermore, the US offensive must be understood in the context of its strategic confrontation with China. Both powers are engaged in a technological and influence race in ocean governance. China, although a signatory to UNCLOS and with a strong presence in the ISA, has not hesitated to act unilaterally in the South China Sea, claiming entire areas in violation of international rulings[38].

The recent executive order marks a shift in the US's internal narrative, promoting mining in international waters and distancing itself from the very rules it invokes to sustain its legitimacy. Diplomats and retired military commanders, such as Ambassador Charles Ray and Vice Admiral Kevin Green, warn that the refusal to ratify UNCLOS weakens US leadership in ocean governance, undermines its credibility vis-à-vis China, and contradicts the usual practice of its own navy, which already operates according to the principles of the treaty. Strategic interests cannot be sustained solely by military power; they also require adherence to shared norms. Regaining global leadership requires a real commitment to multilateralism, ratification of UNCLOS, and a strategy that combines power, legality, and cooperation[39].

The United States' strategic shift toward maritime nationalism represents a deliberate break with the current multilateral regime, motivated by national security concerns, corporate pressure, and geopolitical rivalry. Although this move could force a regulatory reaction within the ISA, it also increases the risk of fragmentation of the law of the sea and jurisdictional conflicts. The key question is whether this unilateral gamble will be sustainable over time, or whether the United States will ultimately be forced to sit down at the multilateral negotiating table it has avoided for so long.

[37] Stevenson, J. R. & Oxman, B. H. (1994). The future of the United Nations Convention on the Law of the Sea. *American Journal of International Law, 88*(3), 488–499.
[38] Colin, S. (2016). China, the US, and the Law of the Sea. *China Perspectives, 2 (106)*, 57–62.
[39] Ray, C. & Green, K. (2025, May). *Needed: American diplomacy, defense, democracy*. U.S. Naval Institute Proceedings.

5. France

France has historically been a continentally oriented power, despite the strategic importance of its maritime dimension. Thanks to its overseas territories, it has one of the largest exclusive economic zones in the world, second only to that of the United States. But it is not this geographical reality that has prompted France's shift in attitude towards the seabed, but rather a more recent strategic awareness. These spaces are no longer exclusively the scene of scientific exploration but have become emerging theaters of competition, conflict, and power. In this context, President Emmanuel Macron's decision to launch the "Stratégie ministérielle de maîtrise des fonds marins" (Ministerial Strategy for Mastery of the Seabed) in February 2022 marked a turning point that deserves attention[40].

As part of the "France 2030" program and this strategy, France has commissioned the development of new means of operating at a depth of 6,000 meters, which will be deployed by the French Navy starting in 2026. This capability is set out in a roadmap included in the Military Programming Law through the "Maîtrise des fonds marins" (MFM) armament program, launched in 2023. The program finances specific defense developments, which will constitute the French Navy's first deep-sea operational capability and anticipate the full deployment provided for in the law[41].

This initiative is divided into three phases. The first (2022–2026), with the Calliope missions as its central focus, has enabled personnel to be trained and critical infrastructure to be inspected through joint exercises between the Navy, IFREMER, and other technical and scientific agencies. The second phase (2026–2028) provides for the effective integration of the new systems, with an initial budget of €300 million. The third phase, starting in 2028, aims to consolidate an autonomous submarine force with four AUVs and two ROVs (remotely operated vehicles) fully operational by 2030.

CEPHISMER, a center of excellence in underwater intervention since the 1930s—promoted by Jacques Cousteau—now plays a key role in deploying vehicles to depths of

[40] Centre d'études stratégiques de la Marine (2022, October). *Études Marines n°22: Fonds marins*. Ministère des Armées

[41] Government of France (2024, October 2). *France 2030 – Maîtrise des fonds marins: La DGA commande le développement de deux systèmes de robotique sous-marine grands fonds*. Retrieved from https://www.info.gouv.fr/upload/media/content/0001/12/e10eb850f727ab9b98e1189dea5c321ab6e04278.pdf

up to 2,000 meters and conducting deep-sea operations. This unit doubled its staff in 2023. The combination of technical capabilities, operational experience, and industrial development positions France as one of the few countries capable of acting with its own resources in the deep sea, an area of growing strategic, economic, and military value[42].

The strategic document is based on a clear diagnosis: the seabed has become one of the new areas of strategic dispute, alongside cyberspace and space. This assertion implies a profound doctrinal shift. It is no longer just a question of preserving natural resources or ensuring navigation, but of securing dominance—in the military, technical, and scientific sense—of a largely unknown environment: less than 3% has been accurately explored.

The logic of "maîtrise" (mastery) in French strategic language implies not only the capacity to intervene, but also to deter, monitor, and deny access to third parties. This approach responds to a global context in which state and private actors are accelerating their presence on the ocean floor for research, mineral exploitation, or critical infrastructure surveillance.

The 2022 Ministerial Strategy sets a central objective: to achieve full intervention capabilities to a depth of 6,000 meters by 2030. This threshold is not accidental: it represents 97% of the planet's oceanic relief and is the operational limit of the most advanced intervention vehicles. Achieving this goal requires technical capabilities, reorganizing existing instruments, and mobilizing civil-military cooperation. The French Navy, IFREMER, SHOM, CIMER (Interministerial Committee for the Sea), and the national industry, together with the DGA (Directorate General of Armament), are called upon to work in coordination to create a sovereign system of knowledge, surveillance, and action in the deep sea.

The path towards this objective has already begun to be mapped out with concrete actions. The most symbolic was the Calliope mission, carried out in October 2022 aboard the *Beautemps Beaupré* in the Bay of Biscay. During this operation, Kongsberg's Superior HUGIN, a deep-sea AUV, was used for the first time to inspect submarine cables at depths of over 4,500 meters and observe the wreckage of the *Grande America*. The

[42] Cols bleus (2024, January). *Maîtrise des fonds marins, le défi majeur du vingt-et-unième siècle.* N.º 3115, Marine Nationale.

campaign validated sensors, trained personnel, and generated operational doctrine, reinforcing the synergy between the Navy, IFREMER, and centers such as CEPHISMER[43].

The MFM program combines the initial acquisition of foreign equipment with the progressive national development of AUVs and ROVs. These systems will enable everything from discreet surveillance to defensive or offensive actions. The fleet will have two teams based in Brest and Toulon, deployable by sea or air. These capabilities are expected to be integrated into multipurpose platforms, such as new-generation hydrographic vessels or future mine warfare units. By 2030, an operational force of 550 military and civilian specialists is estimated. The structural reorganization, including the creation of a specific command within the ALFAN (Naval Action Force), seeks to ensure doctrinal coherence, and synergies with civilian actors, and consolidate a national industrial base. This return to the deep sea marks a decisive step toward France's strategic autonomy in an increasingly contested environment.

We see that, unlike the United States, France does not adopt unilateral diplomacy. Although it has requested mining exploration contracts through IFREMER within the framework of the ISA, it has also been one of the main promoters of a “precautionary moratorium” until solid scientific data on the environmental impact of underwater mining is available. This position does not reflect a contradiction, but rather a strategy of normative leadership. France aspires to set the pace in the design of the international legal framework, promoting biodiversity protection and environmental assessment standards. At the UN conference on the oceans held in Lisbon in 2022, President Macron supported a “strict and binding” legal framework to protect abyssal ecosystems from short-term interests.

In this regard, the work of IFREMER and projects such as “Pourquoi pas les abysses” are essential[44]. The use of environmental DNA techniques, genomic mapping of deep ecosystems, and the characterization of ecosystem services from hydrothermal vents place France at the forefront of abyssal science. This knowledge not only enriches the

[43] Groizeleau, V. (2022, November 25). *Grands fonds: la Marine nationale conduit ses premières opérations*. Mer et Marine. Retrieved from https://www.meretmarine.com/fr/defense/grands-fonds-la-marine-nationale-conduit-ses-premieres-operations

[44] Arnaud-Haond, S. & Pradillon, F. (2017). Pourquoi pas les abysses? Le projet de recherche de l’Ifremer pour mieux connaître la biodiversité des fonds marins. *Annales des Mines – Responsabilité et environnement*, (1), 40–42.

global database, but also strengthens France's legitimacy in international forums discussing the future of deep-sea exploitation, the BBNJ treaty, and ISA reform.

On the other hand, the military approach is not limited to surveillance. The Military Programming Law (2024–2030) explicitly identifies the seabed as a strategic conflict space, alongside cyberspace and the space environment. This triad reflects a contemporary reading of threats: covert actions, sabotage, denial of access, and manipulation of infrastructure. The French Navy has begun to integrate the seabed into its operational planning, its doctrine of warfare under the sea, and its extended deterrence capabilities. This involves not only developing resources, but also generating intelligence, risk maps, and response doctrines.

France does not only defend its EEZ. Its ambitions also extend to the Zone, the international seabed under the aegis of the ISA. As an active member of this organization and promoter of international codes, France combines normative power, scientific capacity, and technical means. This triple dimension contrasts with more aggressive models, such as that of the United States, which opt for unilateralism. In the French case, maritime power is exercised through a combination of sovereign means, scientific alliances, and diplomatic leadership.

In conclusion, France has transformed its approach to the seabed into a state policy. The 2022 Ministerial Strategy is not a simple technical roadmap, but a manifesto of national ambition. Unlike other actors who improvise or act reactively, France has chosen to anticipate. Its commitment is clear: to consolidate comprehensive control over the seabed, understood as a space of power, knowledge, and sovereignty. This strategy places France at the forefront of the global competition for ocean resources and sets out a model that Spain would do well to observe closely.

6. China

China's strategy toward the seabed combines three elements that, taken in isolation, might seem contradictory: formal respect for the multilateral framework of UNCLOS, relentless technological and industrial ambition, and an increasingly assertive, even aggressive, foreign policy in its immediate maritime environment. Together, this triad makes China the most advanced and, at the same time, the most controversial player in the current competition for control of the ocean floor.

Unlike the United States, which has chosen to remain outside UNCLOS, China has played from within. It has done so with a mixture of diplomatic astuteness, strategic financing, and industrial capacity building that has allowed it to quietly become the country with the most mining exploration contracts awarded by the ISA[45].



Figure 11 Opening ceremony of the ISA-China JTRC in 2023 (Source: ISA).

Since the 1980s, China has understood that the seabed represents one of the last frontiers of power. Its partnership with the ISA is proof of this. Not only has it generously funded this institution, but it has also placed Chinese technicians and bureaucrats in key positions within its technical bodies, trained experts from developing countries at its national base in Qingdao, and created the ISA-China Joint Training and Research Center (CJTRC), which already operates as an international platform for capacity transfer and diplomatic legitimization[46].

This institutional penetration has enabled China to block initiatives contrary to its interests. At the 2023 ISA session, it was Beijing that managed to block a motion to establish a precautionary moratorium on licensing, thus frustrating the demands of several European

[45] Kardon, I. B. & Camacho, S. (2023). *Why China, not the United States, is making the rules for deep-sea mining*. Carnegie Endowment for International Peace. Retrieved from https://carnegieendowment.org/research/2023/12/why-china-not-the-united-states-is-making-the-rules-for-deep-sea-mining

[46] International Seabed Authority & National Deep Sea Center of China. (2024). *ISA-China JTRC annual report 2023–2024*. International Seabed Authority. Retrieved from https://www.isa.org.jm/publications/isa-china-jtrc-annual-report-2023/

countries and Pacific island states. At the same time, its technological deployment has been remarkable. The Chinese ocean research program began with *Jiaolong*, the first deep-sea manned submersible (DSV) developed by the National Deep Sea Engineering Center (NDSE), which is part of the Ministry of Natural Resources and based in Qingdao.

In 2010, the Jiaolong reached 3,759 meters in the South China Sea, making China the fifth country in the world with manned diving capabilities at depths of more than 3,500 meters. This milestone marked the beginning of an ambitious national strategy that has resulted in one of the world's most advanced infrastructures for seabed exploration. Designed to operate at depths of up to 7,000 meters, it is equipped with high-precision navigation, sample collection, mapping, and robotic manipulation systems, and has led numerous missions in the Pacific and Indian Oceans.

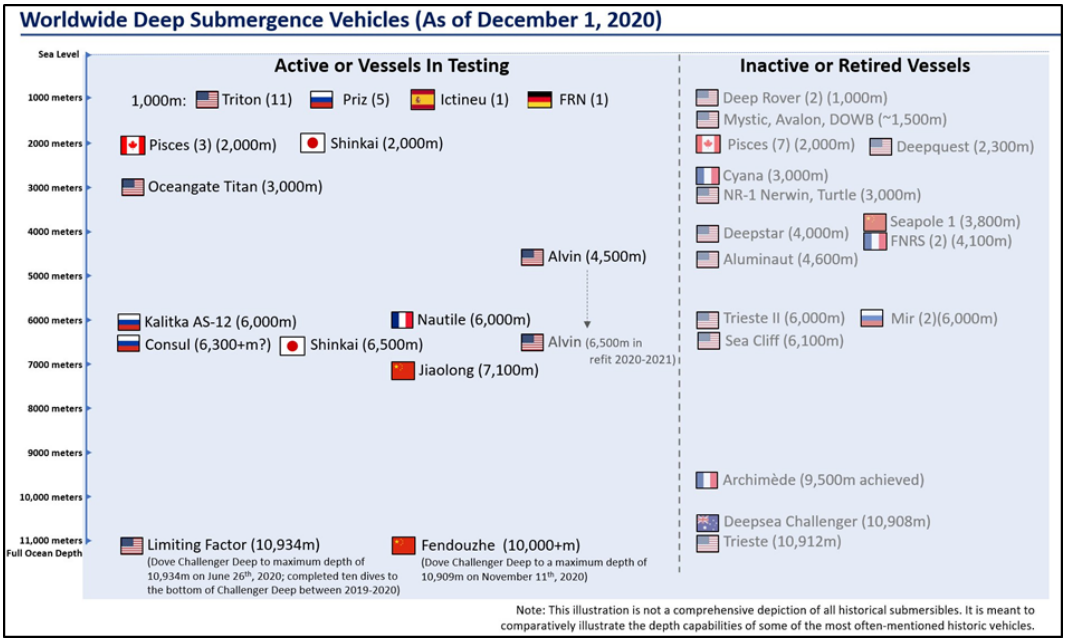


Figure 12 Submersibles in the world (Source: Vescovo).

The second major Chinese institution is the Institute of Deep Sea Science and Engineering (IDSSE), which is part of the Chinese Academy of Sciences. Located in Sanya, the IDSSE leads technological development and abyssal research. It operates the submersibles Shenhai Yongshi, limited to 4,500 meters, and Fendouzhe, capable of reaching 11,000 meters, as well as a fleet of three state-of-the-art scientific vessels. These platforms enable prolonged dives, sample collection, high-resolution sonar mapping, and the deployment of scientific equipment in extreme environments.

Together, these capabilities have enabled China to conduct more than half of all manned

deep-sea dives worldwide in the last three years. Furthermore, with plans to install a permanent scientific station at a depth of 2,000 meters, the country is positioning itself to lead the future commercial exploitation of ocean floor resources. This effort is not solely scientific: the possibility of dual-use—civilian and military—of these platforms, especially with the handling of submarine cables, adds a key strategic dimension to China's abyssal program.

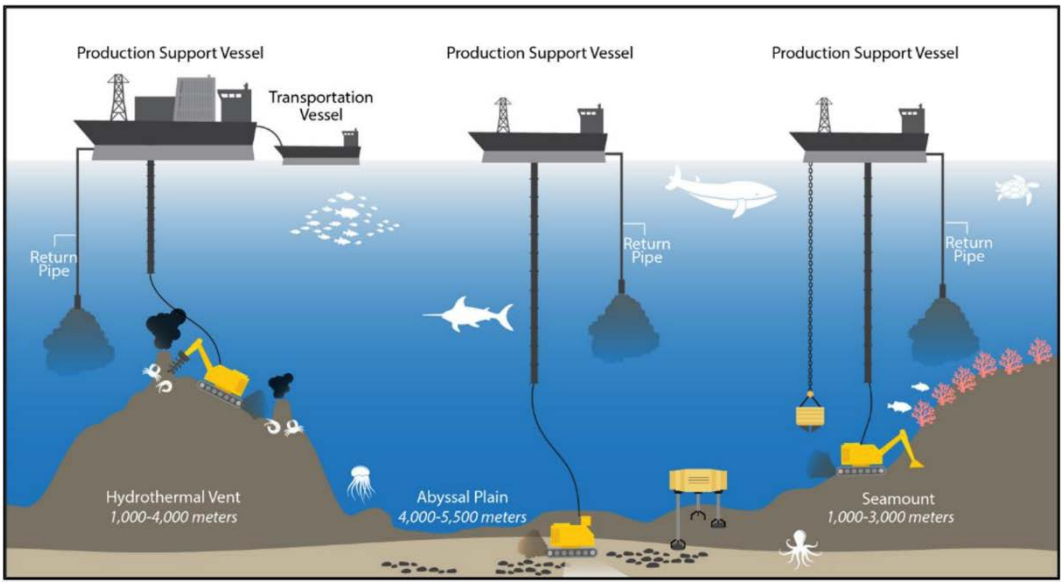


Figure 13 Examples of underwater mining machinery (Source: CRS).

Beijing has identified deep exploration as one of the strategic pillars of its plan for the exploration of the "three depths": land, sea, and space. In 2016, China unveiled its strategy for deep-sea exploration with a series of ambitious short- and medium-term goals[47]. By 2020, it aimed to master the technologies necessary for the extraction of underwater resources and lay the foundations for their commercial exploitation. The plan included the development of a DSV to operate at full ocean depth (11,000 meters), as well as modular technologies for unmanned vehicles (AUVs and ROVs). Since then, the country has focused its efforts on coordinating its main research agencies, universities, and companies in the sector. The goal is clear: to position China among the world leaders in deep-sea access, exploration, and exploitation.

Most significant, however, is the articulation between this technical capacity and a carefully constructed geopolitical narrative. China projects itself as a leader of the Global

[47] Chinese Government (2016). China defines its strategic objectives for the exploration of the "three depths" of land, sea, and air. Retrieved from https://www.gov.cn/xinwen/2016-09/06/content_5105643.htm

South and a promoter of an inclusive and cooperative ocean order. China has championed the initiative to "Build a Maritime Community with a Shared Future" (MCSF), a deliberately ambiguous concept that seeks to counter Western normative hegemony in the oceans. On April 23, 2019, President Xi Jinping formally presented this proposal, stating that "the blue planet we humans inhabit is not divided into islands by oceans, but is connected by oceans to form a community with a shared future, in which the peoples of all countries share joys and sorrows"[48].

Through this initiative, China trains scientists, offers cooperation in marine research, and acts, in practice, as a provider of capabilities for states that lack their own means of accessing the seabed. But this façade of solidarity does not stand up to rigorous analysis. In reality, China is acting according to the logic of strategic maximization. Its opposition to a precautionary pause in mining, its resistance to incorporating strict environmental standards into the ISA's mining code, and its commitment to a "first come, first served" model reveals a clear regulatory ambition: to establish a permissive regime that allows it to exploit before others are ready. Its comments on the ISA's draft regulations are explicit: it rejects technical obstacles, calls for rapid enactment of rules, and downplays the ecological implications. Far from criticizing China, the ISA depends in part on its funding and logistical contributions.

At the legal level, China passed its first "Deep Sea and Deep Ocean Law" in 2016, to regulate the activities of its contractors and ensure compliance with ISA rules. Its objective was to guarantee compliance with exploration contracts signed with the ISA, consolidate national technological capacity in deep-sea research and exploitation, and promote the sustainable development of China's ocean program[49]. Although it mentions environmental protection as a guiding principle, its real objective is to create a predictable legal framework for Chinese state-owned and private companies, guaranteeing legal certainty and institutional support. In short, it is enabling legislation that aims to accelerate rather than restrict[50].

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[48] Chen, Z. (2019, April 23). *Xi proposes building maritime community with shared future*. Xinhuanet. Retrieved from http://eng.chinamil.com.cn/view/2019-04/23/content_9486015.htm

[49] Xu, X., Zhang, G. & Xue, G. (2017). China's Deep Seabed Law: Towards "Reasonably Appropriate" Environmental Legislation for Exploration and Exploitation of Deep Sea Minerals in the Area. En *Asian Yearbook of International Law*. Leiden: Brill.

[50] COMRA (2016). *Study of China's "Law on the Deep Sea and Deep Ocean" de China*. Retrieved from http://www.comra.org/2016-03/16/content_8638524.htm

The contrast between rhetoric and practice is accentuated when analyzing China's behavior in its immediate maritime environment. The construction of artificial islands in the South China Sea, the militarization of reefs, and the refusal to comply with the 2016 ruling of the Permanent Court of Arbitration in The Hague—which ruled in favor of the Philippines on its EEZ—show a clear pattern: China respects the law of the sea only when it suits it. Its "nine-dash line" map and its insistence on historical rights with no legal basis recognized by UNCLOS directly contradict the spirit of the treaty it claims to uphold in the ISA[51].

This contradiction undermines its normative credibility. While promoting standards in multilateral forums, it undermines those same principles in areas where it exercises direct pressure. This double standard generates mistrust but also reflects Beijing's accumulated power. Its ability to exert simultaneous influence at the technical, legal, and diplomatic levels makes it a difficult actor to counter. Its alliance with countries in the Global South, based on aid, technology transfers, and training, reinforces this position.

From an industrial standpoint, China has already signed 15-year contracts to explore more than 75,000 km² in the Clarion-Clipperton fracture zone and continues to expand its presence in the Indian and Southeast Pacific Oceans. State-owned companies such as COMRA (China Ocean Mineral Resources R&D Association) are leading these operations, supported by research institutes and bilateral cooperation programs with island states such as Fiji, Tonga, and Kiribati. Chinese dominance is not limited to extraction: it also includes processing, refining, and logistical control of strategic mineral supply chains, which are the real lever of its global influence.

China has understood that the seabed is a regulatory, technological, and diplomatic battleground. Its strategy is comprehensive: it combines formal respect for international law with the manipulation of its weaknesses, unprecedented technological expansion, and skillfully deployed influence diplomacy. For Europe and Latin America, this stance should serve as a warning. Multilateral regulation of the deep ocean is at stake, and if responsible actors do not react firmly, the "Chinese model" of covert extraction could become the new global norm.

[51] Anand, H. (2024). *Claims of China on South China Sea refute UNCLOS*. Defence Research and Studies. Retrieved from https://dras.in/claims-of-china-on-south-china-sea-refute-unclos/

7. Comparison

Bartlett's model, developed by the National Security Decision-Making Department of the Naval War College, is a powerful conceptual tool for understanding strategic development and force planning. Its strength lies in representing the dynamic interaction between a set of key variables that every strategist must weigh to make informed decisions on national security. It is not a rigid normative model, but rather a flexible guide that allows for the identification of tensions, imbalances, and opportunities for realignment in strategic decisions[52].

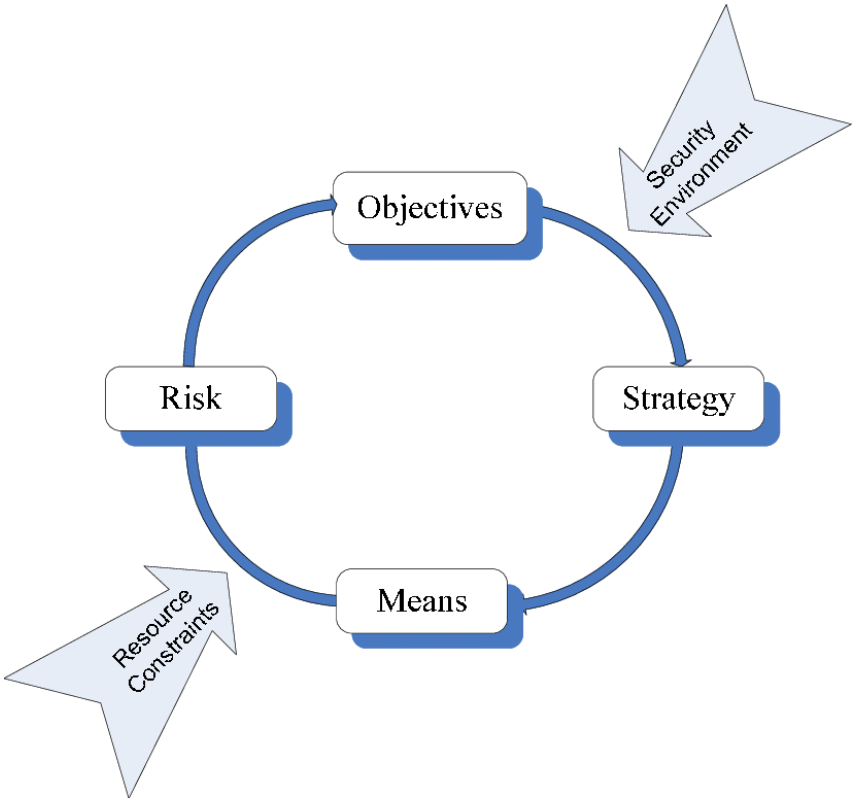


Figure 14 Bartlett's strategic model (Source: NWC).

The model organizes strategy around six fundamental variables: strategic goals or objectives, the security environment, available instruments of national power, strategies or action plans, resource constraints, and the risk of failure. These elements interact in a continuous cycle, where any change in one variable necessarily affects the others. Hence, the strategic process, far from being linear, is iterative and adaptive. The core of

[52] Bartlett, Henry C., Holman, G. & Somes, Timothy E. (2004). The Art of Strategy and Force Planning En Richmond M. Lloyd *Strategy and Force Planning* (4th Edition). Newport: Naval War College Press.

the model is to achieve realistic consistency between the ends pursued, the means available, and the courses of action, always bearing in mind the changing environment and the uncertainty inherent in strategic risk[53].

Applied to the case of seabed protection, Bartlett's model allows us to compare how different countries—Spain, the United States, France, and China—have aligned (or not) their national objectives with their technological, regulatory, and industrial capabilities. Below is a comparative reflection that applies this analytical framework to the four cases already studied, without resorting to lists or tables, but rather as a continuous development of strategic thinking.

In the case of Spain, there is an imbalance between ends and means. The objectives are succinctly stated in documents such as ENSM-2024, which recognizes the importance of protecting underwater infrastructure and anticipating hybrid threats. However, the material resources available are scarce, and the courses of action are not clearly defined. There is no specific strategy for the seabed, nor is there a capabilities plan to achieve tangible objectives.

The risk in this context is not only technical or environmental but also strategic: Spain could be marginalized from an area that is key to its security and economic development. The strategy is not in line with the security environment—especially in areas such as the Canary Islands or the Gulf of Cádiz—where other actors are advancing without a firm response from the state.

The United States, on the other hand, has made a clear strategic shift with President Trump's executive order of April 24, 2025. Here, the goals are ambitiously defined: to secure access to critical minerals, reduce dependence on adversaries such as China, and revitalize the domestic shipbuilding industry. The means are beginning to align with these ends: there is a regulatory framework, industrial capacity, technical know-how, and political will.

The US approach is unilateral, outside the ISA, which introduces tension into the risk variable by removing restrictions. The US model may be effective in the short term, but it creates friction with the international legal order, exposes the country to diplomatic disputes, and may undermine its global normative leadership. Despite its apparent

[53] Castle, T. N. & Lloyd, R. M. (2004). *Strategy and force planning* (4ª Ed.). Newport: Naval War College Press.

internal coherence, the US strategy assumes a high level of risk, as it faces an international environment that could become hostile if coalitions opposed to its extractive approach consolidate.

France represents, in many respects, the most balanced example. The French strategy defines clear objectives: to achieve full operational capacity to a depth of 6,000 meters by 2030, to protect critical infrastructure, and to lead international regulation. The means are in place: a scientific and military fleet, cooperation between ministries, research centers such as IFREMER, and industrial capabilities such as the DGA.

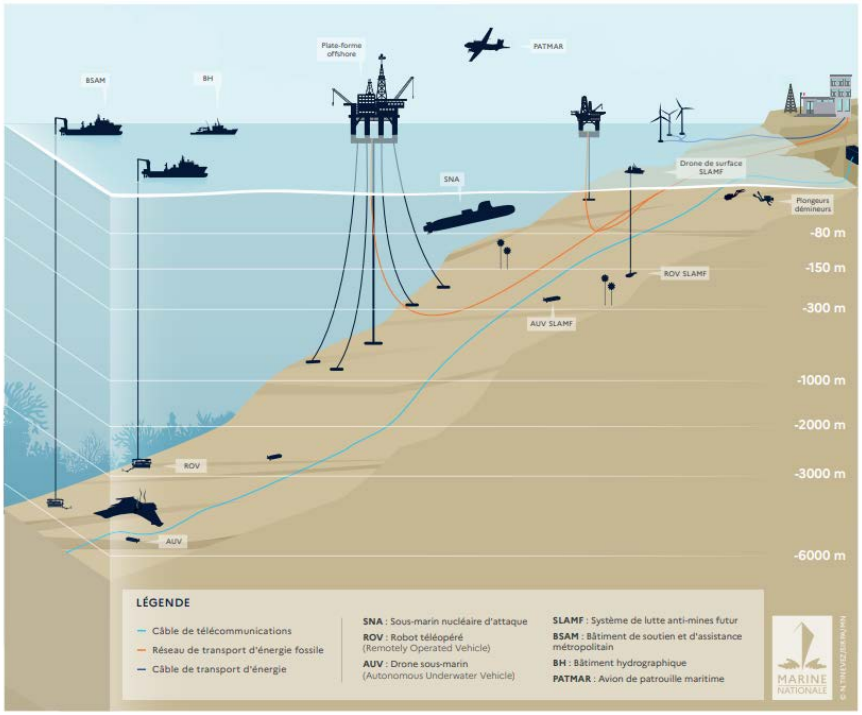


Figure 15 View of the French seabed (Source: Marine Nationale).

The French approach combines the defense of multilateralism with a strong national presence at all levels. Investment is made in science as well as surveillance and deterrence. The security environment is correctly interpreted: France understands that the seabed is an area of strategic competition where science, economics, ecology, and defense intersect. In this case, risk is managed through anticipation, civil-military cooperation, and normative diplomacy. France does not improvise; it plans with a long-term vision and continuously adjusts its strategic variables in line with changes in the environment.

China, finally, illustrates a case of instrumental coherence, but with a growing gap between discourse and practice. Its objectives are clearly defined: to lead

access to seabed resources, influence international norms, and strengthen its industrial base.

The means are available: a fleet of autonomous and manned vehicles, processing capacity, financial muscle, and a privileged position within the ISA. The course of action is hybrid: on the one hand, international legality is supported, and cooperation with countries in the Global South is pursued; on the other, aggressive action is taken in the South China Sea, arbitration rulings are ignored, and military bases are built on artificial islands.

The security environment is interpreted from a gray zone logic, where technical superiority is combined with legal ambiguity and diplomatic pressure. The risk, therefore, is not so much operational as reputational: if China continues to erode the international legal consensus while promoting its technological hegemony, it could encounter growing resistance from regional blocs, from ASEAN to the EU.

Thus, applying Bartlett's model to these four cases reveals very different strategic configurations. Spain presents a dissonance between its stated aims and its actual means; the United States aligns power and ambition, but challenges the international order; France achieves a virtuous balance between objectives, capabilities, and legitimacy; while China plays all the keys on the strategic piano, assuming that leadership in the seabed is not inherited or shared, but conquered.

8. Conclusions

The comparative analysis of the national strategies of France, the United States, China, and Spain about the seabed allows us to draw a series of strategic conclusions that transcend technical or regulatory issues. In the new scenario of competition for control of the ocean floor, the alignment of national objectives, available capabilities, and the security environment is key to avoiding irrelevance. Bartlett's model, applied as an analytical tool, has made it easier to identify these consistencies—or, in some cases, inconsistencies—between the critical variables of any strategic process: ends, means, environment, strategy, and risk.

France represents the most complete case of strategic balance. It has identified the seabed as a new domain of interest and has articulated a comprehensive response that

combines technological capabilities, science, industry, and normative diplomacy. The 2022 strategy sets clear goals—such as the capacity for autonomous intervention at 6,000 meters by 2030—and responds to a mature reading of the geopolitical environment. Its ability to anticipate, articulate civil and military means, and position itself as a benchmark in multilateral governance of the deep ocean is exemplary. France does not improvise: it plans, invests, and deploys.

China, for its part, has emerged as a key player within the ISA, both because of its institutional influence and the breadth of its technical resources. With multiple exploration contracts, autonomous submersibles, and associated industrial infrastructure, it has consolidated its presence on the seabed from a position of comprehensive power. However, this strategy presents a structural contradiction: its formal support for multilateralism coexists with unilateral and coercive practices, especially in the South China Sea, where it has ignored international resolutions and militarized disputed areas. Its model, effective in instrumental terms, nevertheless erodes the credibility of the international legal regime it claims to respect.

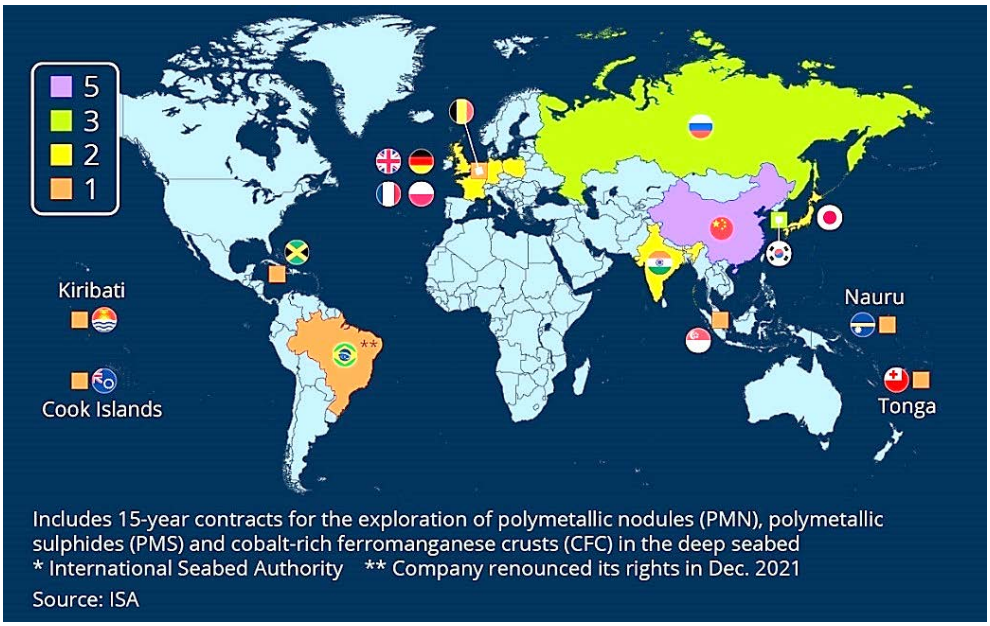


Figure 16 Países por número de contratos en la ISA (Fuente: Statista).

The United States has opted for a unilateral approach. The April 2025 executive order authorizes underwater mining in international waters without ISA approval, marking a turning point from its traditional position of customary respect for UNCLOS. This decision is based on legitimate strategic interests—reducing dependence on critical minerals, revitalizing the shipbuilding and technology industries, and responding to competition

from China—but it poses a normative dilemma. It assumes a risk of diplomatic isolation and erosion of the multilateral framework by operating outside the international regime. Its strategy is consistent in domestic terms, but it may weaken the global legal architecture that has sustained the maritime order in recent decades.

Faced with these three models, Spain's situation reveals a dissonance between stated objectives and effective means. Although the ENSM-2024 recognizes the importance of protecting underwater infrastructure and anticipating hybrid threats, this has not translated into the development of a specific plan for the seabed. National policy lacks capacity planning, integration between science, defense, and industry, and proactive ocean diplomacy. The Navy's procurement plans and its presence on the ISA Council are relevant, but insufficient if not framed within a structured vision. Spain has one of the largest EEZs in Europe but lacks the technical means to exercise effective sovereignty, which creates structural vulnerability, especially in contexts of regional competition, such as in the Tropic Mountain.

No country can secure its interests on the seabed unless it coherently aligns its objectives with its capabilities, its courses of action with the environment, and its ambition with the reality of risks and limited resources. Bartlett's model does not provide recipes, but it does provide coherence. And in the case of the seabed, coherence is the first condition of sovereignty. In this context, the main conclusion of this study is that Spain needs a national strategy for the seabed.

This strategy should be based on a rigorous analysis of the security environment, identify specific vital interests (resources, infrastructure, regional stability), define achievable operational objectives (observation and autonomous response capabilities), and mobilize technical, scientific, and diplomatic resources in an integrated manner. It is not a question of matching global powers, but of avoiding being strategically relegated in an area that directly affects the country's security, technological development, and environmental sustainability.

The French model combines technological innovation, inter-institutional coordination, and capacity building. Missions such as Calliope allow for the training of personnel and the testing of systems before they are put into service, while CEPHISMER plays a key role in developing doctrine for underwater intervention. At the same time, they face legal challenges under UNCLOS, particularly in protecting their extensive and distant EEZ.

France advocates a model of technological and scientific sovereignty in this new area of global competence, with a dual (civil-military) approach that seeks to guarantee the freedom of action of its forces, protect its economic interests, and preserve the marine environment.

The protection of the seabed cannot be addressed exclusively from an environmental perspective. The conservation of deep-sea ecosystems is essential, but it will only be effective if it is based on knowledge, active presence, and surveillance and control. The defense of the precautionary principle—a position held by Spain within the ISA and the BBNJ—is only credible if it is accompanied by the means to monitor and, if necessary, intervene. Otherwise, moral authority yields to fait accompli. The seabed is, in short, now another dimension of state sovereignty. Its control requires political will, strategic investment, and clarity of purpose.

In an international environment increasingly marked by technological competition, scarcity of strategic resources, and erosion of the multilateral legal consensus, the seabed is emerging as a new arena for geostrategic dispute. Spain cannot afford to remain on the sidelines. More than an option, moving forward in this area has become a necessity. A specific national strategy for the seabed is needed to articulate capacity building, promote international cooperation, strengthen presence in multilateral forums, and clearly define national interests in the ocean depths.

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