TWELFTH SESSION

INTERNATIONAL SEABED AUTHORITY (LEGAL AND TECHNICAL COMMISSION)

BACKGROUND GUIDE

Letter from the Executive Board

With a deep sense of admiration and affinities, we would like to thank the secretariat of LMUN 2025, for a warm and generous invitation extended to us. With this letter, we graciously welcome the participants who have shown interest in participating in the simulation of the International Seabed Authority (Legal and Technical Commission). We are elated from the fact that together we have an opportunity to re-imagine and fructify this council with thoughts and actions of our own.

As a board, we know it is going to be a bit technical for many, therefore we assure each and every participant that the board will be available for help at any hours needed and will, to the best of our efforts, help each participant to chart and organize himself in this two-day simulation. We profoundly hope that with growing interactions during the entire course many conceptions and notions will change as the participants will explore the avenues of the issues concerning Deep-sea Mining and Ocean ecosystem. Our consistent encouragement and support during the entire exercise will not only help you in MUNning but also help in a certain academic learning about geo-polity, diplomacy and policy making.

We hope that this committee will be in constant motion— competing with fellow participants with passion to win but as an advice we insist that in such a pursuit one must never be too focused to share your love and care for life with those around you, be empathetic towards all. We believe all our participants will value character over pedigree and also genuinely believe that optimism will thrive each and everyone attending.

Therefore, with these concluding remarks, we wish everyone well and hope for friendly cooperation.

Regards,

Hrithik Singh
Chairperson

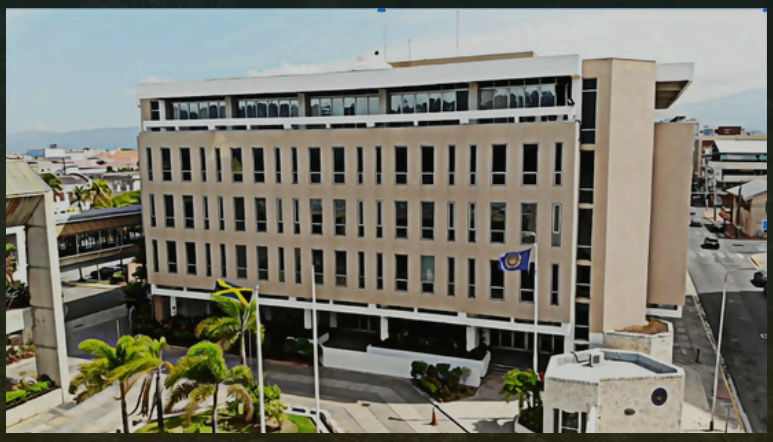
Kritin Bhasin
Vice - Chairperson

Email address - isa.lmun2025@gmail.com (for paperwork and queries)

PART - A

ABOUT INTERNATIONAL SEABED AUTHORITY (ISA)

The International Seabed Authority (ISA) is an autonomous international organization established under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (1994 Agreement).



International Seabed Authority HQ, Kingston Jamaica

ISA is the organization through which States Parties to UNCLOS organize and control all mineral-resources-related activities in the Area for the benefit of humankind as a whole. In so doing, ISA has the mandate to ensure the effective protection of the marine environment from harmful effects that may arise from deep-seabed-related activities.

ISA, which has its headquarters in Kingston, Jamaica, came into existence on 16 November 1994, upon the entry into force of UNCLOS. It became fully operational as an autonomous international organization in June 1996, when it took over the premises and facilities in Kingston, Jamaica, previously used by the United Nations Kingston Office for the Law of the Sea.

In accordance with UNCLOS, Article 156(2), all States Parties to UNCLOS are ipso facto members of ISA. As of October 01, 2025, ISA has 170 Members, including 169 Member States and the European Union.

PART - A

ORGANS OF ISA

The International Seabed Authority (ISA) has several principal organs established under the United Nations Convention on the Law of the Sea (UNCLOS). These organs work together to govern activities related to deep-seabed mineral resources in the international seabed area (the "Area"), ensuring they benefit humankind while protecting the marine environment.

KEY ORGANS OF THE ISA

Assembly: The supreme policy-making body, consisting of all 170 members (169 States Parties and the European Union). It sets general policies, approves budgets, and elects the Council and Secretary-General.

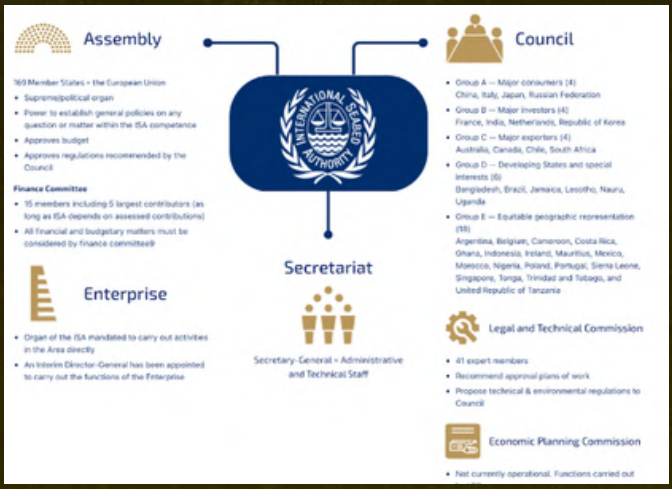
Council: The executive organ with 36 members elected by the Assembly for 4-year terms. It establishes specific policies, supervises exploration and exploitation activities, and adopts rules and regulations (e.g., the Mining Code).

Secretariat: Led by the Secretary-General (currently Michael W. Lodge as of 2025), it provides administrative support, facilitates research, and manages data and capacity-building programs.

Legal and Technical Commission (LTC): A subsidiary body of the Council with 41 experts (as of 2025). It reviews exploration plans, assesses environmental impacts, and recommends regulations.

Finance Committee: A subsidiary body of the Council with 15 members. It advises on financial matters, including budgets and benefit-sharing from seabed resources.

Enterprise: A future organ intended to conduct mining activities on behalf of the ISA, representing developing countries' interests. It has not yet been fully operationalized.



KEY ORGANS OF THE ISA

The Legal and Technical Commission (LTC) serves as a body under the ISA Council and presently includes 41 members. These individuals are chosen by the Council for a five-year term (beginning January 1, 2023) from nominees put forward by member States.

ELECTION OF THE COMMISSION

1. LTC members are selected by the Council from candidates proposed by States Parties. They must possess suitable expertise in areas like mineral resource exploration, extraction, and processing; ocean science; marine environmental safeguards; or economic and legal aspects of ocean mining and associated disciplines.
2. States Parties are required to propose candidates with exceptional expertise and ethical standards in pertinent areas to guarantee the Commission's efficient operation.
3. The Council strives to maintain a balanced mix of qualifications within the LTC membership. During elections, considerations include fair geographic spread and inclusion of diverse special interests.
4. Commission members serve for five years and can be re-elected once more.
5. Should a member pass away, become unable to serve, or resign before their term ends, the Council will appoint a replacement from the same region or interest group to complete the term.

Mandate & Functions of the LTC

The LTC's core mandate is to serve as an expert advisory body to the ISA on the legal, technical, scientific, and economic dimensions of deep seabed mining in the Area. This includes evaluating proposals for exploration and exploitation of mineral resources, ensuring these activities align with international standards, and promoting the protection of the marine environment. Grounded in Articles 162 and 163 of UNCLOS, as well as the 1994 Agreement relating to the Implementation of Part XI of UNCLOS, the LTC helps fulfill the ISA's responsibility to manage the Area as the "common heritage of mankind," balancing resource development with environmental safeguards and equitable benefit-sharing among all nations.

The LTC also handles numerous responsibilities concerning ongoing operations in the areas, such as evaluating work plan applications, overseeing exploration or extraction efforts (including examining contractors' yearly reports), creating environmental management strategies, analyzing the ecological effects of activities in the Area, drafting and revising rules, regulations, and protocols for these activities, and advising the Council on issues related to the exploration and exploitation of non-living ocean resources (like polymetallic nodules, polymetallic sulphides, and cobalt-rich ferromanganese crusts).

Meetings of the LTC

LTC gatherings typically occur before the ISA's yearly sessions, with a report submitted to the Council afterward. Starting in 2013, the LTC began conducting two meetings annually: a two-week session in February or March, followed by another in the week leading up to the July annual sessions.

Major Achievements of the LTC

From its establishment, the LTC has formulated the following Regulations, which the Council adopted and the Assembly endorsed:

- Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (refer to ISBA/19/A/9 and ISBA/19/C/17)

- Regulations on Prospecting and Exploration for Polymetallic Sulphides (refer to ISBA/16/A/12/Rev.1)

- Regulations on Prospecting and Exploration of Cobalt-Rich Ferromanganese Crusts in the Area (refer to ISBA/18/A/11).

Additionally, the LTC has released these Recommendations:

- Recommendations on evaluating potential environmental effects from marine mineral exploration in the Area (see updated version ISBA/25/LTC/6/Rev.1)

- Recommendations on training initiatives within exploration work plans (see ISBA/19/LTC/14)

- Recommendations on reporting real and direct exploration costs (see ISBA/21/LTC/11)

- Recommendations on the format, structure, and content of annual reports (see ISBA/21/LTC/15)

- Recommendations on area relinquishment under exploration contracts for polymetallic sulphides or cobalt-rich ferromanganese crusts (see ISBA/25/LTC/8).

PART - A

Development of Draft Exploitation Regulations as well as Standards and Guidelines for Activities in the Area

In March 2019, the LTC presented Draft regulations on exploitation of mineral resources in the Area (see ISBA/25/C/WP.1) for Council review. Presently, the LTC is prioritizing the creation of standards and guidelines for exploitation operations in the Area.

PART - B

Issue Brief on Deep-sea Mining

Deep-sea mining is the process of extracting and often excavating mineral deposits from the deep seabed. The deep seabed is the seabed at ocean depths greater than 200m, and covers about two-thirds of the total seafloor. Research suggests deep-sea mining could severely harm marine biodiversity and ecosystems, but we still lack the knowledge and means to implement protections.

Despite this, there is growing interest in the mineral deposits of the seabed. This is said to be due to depleting terrestrial deposits of metals such as copper, nickel, aluminium, manganese, zinc, lithium and cobalt. Demand for these metals is also increasing to produce technologies like smartphones, wind turbines, solar panels and batteries.

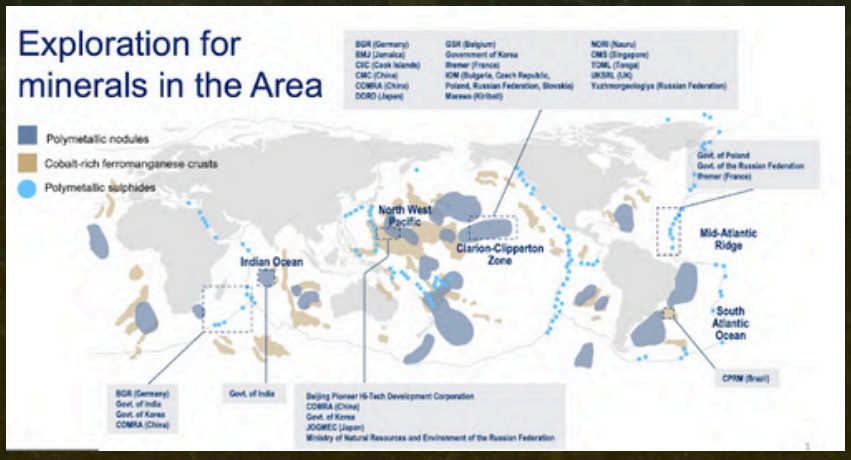
Types of Deep-Sea Mineral Resources and Their Distribution

Three principal resource types dominate DSM discussions:

- Polymetallic nodules (abyssal plains): Potato-sized concretions containing manganese, nickel, copper, and cobalt occur in high abundance across vast tracts of abyssal plains—most prominently in the Clarion–Clipperton Fracture Zone (CCZ) in the central Pacific and in the Central Indian Ocean Basin. Numerous ISA exploration contracts target nodules in the CCZ and Indian Ocean.

- Seafloor massive sulfides (SMS): Concentrated at active and inactive hydrothermal vent fields along mid-ocean ridges and back-arc basins, SMS deposits are high in copper, zinc, gold, and silver but are typically spatially limited and associated with highly specialized biological communities.

- Cobalt-rich ferromanganese crusts: Found on seamount flanks, these crusts are enriched in cobalt, platinum, and tellurium. Extracting crusts typically requires disruptive seamount mining with severe habitat implications.



By May 2022, the International Seabed Authority (ISA), which regulates activities in the seabed beyond national jurisdiction ('the Area'), had issued 31 contracts to explore deep-sea mineral deposits. More than 1.5 million km sq of international seabed, roughly the size of Mongolia, has been set aside for mineral exploration.

To date, the ISA has only issued exploration contracts, but is developing regulations to govern the transition to exploitation. In June 2021, the Government of Nauru notified the ISA of their intention to start deep-sea mining, triggering a rush to finalise the ISA regulations.

Mining in international waters could commence as soon as 2026; even though vital research and work to adopt the required regulations, standards and guidelines to manage deep-sea mining sustainably is far from complete.

Impact of Deep-sea Mining on Ocean biodiversity & ecosystem

As the deep sea remains understudied and poorly understood, there are many gaps in our understanding of its biodiversity and ecosystems. This makes it difficult to assess the potential impacts of deep-sea mining or to put in place adequate safeguards to protect the marine environment, and the three billion people whose livelihoods depend on marine and coastal biodiversity.

Deep-sea mining, which involves extracting minerals like polymetallic nodules, cobalt-rich crusts, and seafloor massive sulfides from the ocean floor at depths often exceeding 4,000 meters, poses significant risks to ocean biodiversity and the deep-sea biome. These ecosystems, including abyssal plains, seamounts, and hydrothermal vents, are among the least explored on Earth, hosting unique species adapted to extreme conditions of darkness, high pressure, and low temperatures. While proponents argue it could supply critical metals for renewable energy technologies with potentially lower impacts than terrestrial mining, scientific evidence and environmental assessments indicate widespread, often irreversible harm. Below, I'll detail the key impacts based on current research, drawing from diverse sources including scientific studies, environmental organizations, industry views, and government reports.

Impacts on Biodiversity and Ecosystems (A case in point: the Clarion-Clipperton Zone)

Deep-sea mining directly disrupts habitats through physical removal of mineral deposits and seabed scraping, leading to immediate biodiversity loss. Polymetallic nodules, for instance, serve as hard substrates for sessile organisms like sponges, anemones, and corals, supporting food webs in otherwise soft-sediment environments. At hydrothermal vents, chemosynthetic communities—relying on mineral-rich fluids rather than sunlight—face destruction, with up to two-thirds of unique mollusk species at risk of extinction. Seamounts, biodiversity hotspots with deep-sea corals and sponges, could see "underwater forests" obliterated, affecting migratory species like whales and tuna. Overall, biodiversity loss is deemed "unavoidable and irreversible" on multi-generational timescales, as deep-sea species reproduce slowly and ecosystems recover at rates of millimeters per millennium.

In the Clarion-Clipperton Zone (CCZ), a prime mining target spanning 4.5 million square kilometers in the Pacific, over 90% of species are undescribed, and mining could eliminate endemic species before they're even cataloged. Examples include the "Casper" octopus, which lays eggs on nodule-attached sponges, and xenophyophores (giant single-celled organisms) that dominate abyssal plains. The Clarion-Clipperton Zone (CCZ) is rich in polymetallic nodules—potato-sized rocks containing critical minerals like manganese, nickel, cobalt, and copper, essential for batteries, electronics, and renewable energy tech. Governed by the International Seabed Authority (ISA) as part of the "common heritage of mankind," the CCZ holds 31 exploration contracts, but no commercial mining has started due to regulatory delays. However, risks are substantial, with scientific consensus highlighting irreversible environmental harm, biodiversity loss, and broader implications.

Environmental Risks in the CCZ

Mining in the CCZ involves collector vehicles scraping nodules from the seafloor, creating direct and indirect environmental disruptions. Direct removal alters sediment composition, geomorphology, and biogeochemical processes, destabilizing the seabed and releasing potential gas hydrates. Indirect effects include sediment plumes—clouds of fine particles that can spread hundreds of kilometers, smothering habitats, interfering with feeding, and releasing toxins like heavy metals into the water column. These plumes may affect midwater and surface ecosystems, including migratory fish patterns vital to Pacific fisheries.

Noise, light, and electromagnetic pollution from operations could disorient marine life, while disrupting carbon cycling—the deep sea stores more carbon than terrestrial ecosystems—might release methane and CO2, exacerbating climate change. Historical tests, like a 1970s simulation, show impacts persisting 40+ years, with reduced marine life and altered sediments. Irreversibility is a key concern: nodules form over millions of years, and recovery could take millennia. Knowledge gaps in ocean dynamics and mitigation tech make "no serious harm" unachievable; current machines are highly impactful, with unproven fixes like sediment return systems

Ecosystem Loss and impact on species at the CCZ

The CCZ is a biodiversity hotspot, with over 5,000 observed species, 90%+ undescribed and potentially unique. Nodules provide hard substrates for sessile organisms like sponges, anemones, and corals, supporting chemosynthetic food webs. Mining would destroy these, leading to habitat fragmentation, species extinction, and disrupted migration or reproduction. Rare genera, like certain nematodes, are vulnerable and may vanish entirely. Impacts extend to mobile species, such as ghost octopuses or deep-diving whales, and could cascade to surface fisheries. Loss is deemed irreversible on human timescales, with no feasible restoration—biodiversity is "non-offsettable." Gaps in baseline data (e.g., undescribed species, life cycles) hinder predictions, and interconnected oceans mean effects cross boundaries. Mitigation via "no-go" zones is possible but limited by governance; avoidance is the only path to no net loss.

Economic & Geopolitical Risks

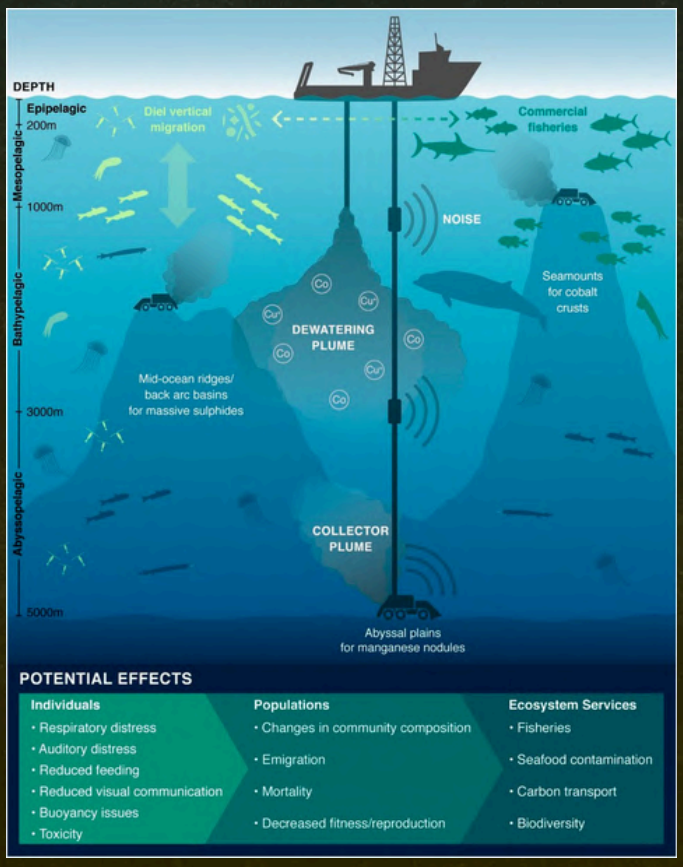
While CCZ nodules could yield billions in minerals (e.g., $20–380 billion estimates), risks outweigh for many stakeholders. Pacific Islands, dependent on fisheries and tourism, face threats to livelihoods from ecosystem damage—e.g., tuna stocks decline could cost billions. Small states like Nauru, Cook Islands, and Tonga lack capacity to negotiate fair deals, risking exploitation by foreign firms. Broader economic trade-offs include depressed land-based mineral prices for developing nations and high mitigation costs. Alternatives like recycling reduce demand, potentially making CCZ mining uneconomic. Knowledge gaps in long-term costs (e.g., environmental cleanup) amplify risks.

The CCZ is a new frontier for resource competition, exacerbating the U.S.-China tensions. China holds five ISA contracts and partners with islands like the Cook Islands for research, potentially enabling dual-use (military/commercial) activities near U.S. territories. The U.S., outside UNCLOS, pursues unilateral mining via executive orders, risking sanctions or trade wars over "illicit" nodules. ISA governance flaws—e.g., conflicts of interest, closed-door deals—erode trust, with debates over profit-sharing from the "common heritage." Divisions persist: 30+ countries support moratoriums for environmental reasons, while others push forward. This could lead to militarization, fragmented regulations, and inequities for Pacific states. Gaps in equitable frameworks heighten risks of exploitation.

Casper octopus

Economic & Geopolitical Risks

Technologically, no systems ensure minimal harm; prototypes are untested at scale. Governance under ISA focuses on minerals, ignoring ecosystems, with weak Environmental Impact Assessments. Socially, opposition grows—NGOs, scientists, and industries call for moratoriums until 2030 for research. Recent events, like a July 2025 Cook Islands push amid ISA delays, highlight the "deep-sea gamble." Industry views, like The Metals Company's successful 2022 tests, claim responsible collection is possible with monitoring. Critics, including Pacific leaders and scientists, warn of unknown harms contradicting sustainability goals, urging pauses for seabed mapping. Overall, while CCZ mining could aid energy security, evidence substantiates profound risks, favoring alternatives until gaps are addressed.



The Dangers of Deep-Sea Mining in the Clarion-Clipperton Zone

Indirect Impacts on Deep-sea Ecosystem

Beyond direct habitat loss, mining generates secondary effects that propagate through the water column and broader ocean:

- Sediment Plumes: Collector vehicles stir up fine sediments, creating plumes that can spread tens to hundreds of kilometers, smothering filter-feeders like corals and sponges, and releasing toxic metals (e.g., copper, nickel) into the water. These plumes may affect midwater ecosystems, which host rich marine life including jellyfish and siphonophores, potentially disrupting food chains and fisheries.

- Noise and Light Pollution: Mining operations produce underwater noise from machinery and vessels, which can interfere with marine mammals' communication and navigation, while artificial lights disorient bioluminescent species.

- Carbon and Climate Disruption: The deep sea is the planet's largest carbon sink, storing more carbon than all terrestrial ecosystems combined. Mining could release trapped carbon dioxide and methane, reducing sequestration capacity and exacerbating ocean acidification and warming. Estimates suggest up to 172.5 tons of carbon released per square kilometer mined annually.

These indirect effects could cascade to surface waters, impacting global fisheries and livelihoods, particularly in Pacific Island nations where tuna stocks might decline. Studies of historical mining tests, such as the 1979 OMCO experiment in the CCZ, reveal persistent impacts 44 years later: visible tracks, reduced megafauna densities (e.g., sponges and holothurians at <0.1 individuals per square meter vs. 0.33 in controls), and altered community structures. Recovery is partial at best; mobile species like echinoderms show some resilience, but sessile organisms and overall diversity remain impaired due to nodule removal, which takes millions of years to reform. Commercial-scale operations could affect areas up to 1.5 million square kilometers, leading to ecosystem fragmentation and reduced functionality in nutrient cycling and carbon storage over decades or centuries.

Expectations of the Executive Board from the Delegates

- **Thorough Research and Preparation:** Delegates are expected to conduct in-depth research on the Clarion-Clipperton Zone (CCZ), including its geological features, mineral resources, and the environmental risks associated with deep-sea mining, such as sediment plumes, biodiversity loss, and ecosystem disruption. Familiarize yourself with key ISA documents, UNCLOS provisions, and recent developments in the "Mining Code" to provide evidence-based arguments during debates.

- **Accurate Representation of Assigned Positions**: As representatives of member states or observers in the LTC, delegates must authentically embody their assigned country's or entity's stance on deep-sea mining—whether prioritizing economic development for developing nations, environmental safeguards, or equitable benefit-sharing. Position papers should clearly outline these views while aligning with the agenda's focus on sustainability and equity.

- **Constructive and Diplomatic Engagement**: Participate actively in formal speeches, moderated caucuses, and unmoderated discussions with respect and professionalism. The EB expects delegates to foster collaboration, listen to diverse perspectives (e.g., from Pacific Island nations, mining companies, and environmental NGOs), and avoid confrontational rhetoric to simulate real-world diplomacy.

- **Focus on Legal and Technical Aspects**: Given the LTC's mandate, emphasize technical feasibility, legal frameworks, and scientific data in your contributions. Propose innovative solutions like environmental impact assessments, protected areas within the CCZ, or technology standards for minimizing harm to biodiversity and ecosystem functions, such as carbon sequestration and nutrient cycling.

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THE TWELFTH SESSION