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Understanding the priorities to deep sea mining by Pacific Island Nations: A case study of Cook Island

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Abstract
The immense mineral riches present in the South Pacific Islands have drawn interest to deep sea mining. The Cook Island Sea Bed Mining Authority (CISMA) and its lack of a build-back-better provision are the main topics of this abstract, which focuses on the case study of deep sea mining in the Cook Islands. Aiming to strike a balance between environmental protection and economic development, CISMA was created to oversee and regulate mining operations. The potential for irreparable harm to the Cook Islands' pristine nature is raised by the absence of a "build back better" clause. In order to ensure ethical mining practises, reduce environmental dangers, and ensure the Cook Islands' natural resources are sustained over the long term, this abstract emphasises the necessity of including a build-back-better provision in the legislation of CISMA. The Cook Islands can do this by leading by example and highlighting the value of both environmental protection and economic development for other countries that engage in deep sea mining. This study proceeds in in the following section – first section would explain on the deep sea minerals and pacific island nations, second section would explore the developmental drivers for seabed minerals, and the last section would provide an account of concluding observation with the case study of cook island that the statutory authority of deep sea mining are loosely crafted to prioritize seabed mining without proper strategy for build-back-better.

Keywords: Deep sea mining, cook island, cook island sea bed mining authority, economic development, build-back-better

Introduction

The term "deep sea mining" describes the process of extracting resources from the ocean floor, more specifically from the seafloor beneath the South Pacific Islands. Due of its possible environmental effects and socioeconomic repercussions for the concerned island nations, this burgeoning sector has attracted a lot of attention and spurred discussions. Minerals like copper, gold, silver, and rare earth elements are abundant in the South Pacific Islands, which include nations like Papua New Guinea, Fiji, Tonga, and Vanuatu. These minerals are frequently discovered in potato-sized mineral formations called polymetallic nodules, which are dispersed across the ocean floor. Due to the enormous quantities of these rich materials, these island nations are attractive to deep sea mining firms. Seabed mining is one of the main techniques utilised in deep sea mining. Robotic devices are sent to the ocean floor, where they cut or suction the polymetallic nodules from the seafloor. The nodules are then pumped to the surface by these devices for additional processing and mineral extraction.

Argument propounding in favour of the Deep sea mining contend that it presents a possible substitute to land-based mining, which has the potential to significantly harm the environment. Deep sea mining, according to proponents, has the potential to lessen the use of terrestrial resources while supplying a steady stream of minerals to sectors like electronics and renewable energy. Additionally, they contend that deep sea mining might lead to economic expansion and employment creation for South Pacific island countries, which frequently have few other viable economic options. Deep sea mining, however, also brings up substantial issues and difficulties. The potential environmental impact on the delicate deep-sea habitats is one of the main worries. Unique and diverse marine animals that have evolved to survive in harsh environments can be found on the ocean floor. These ecosystems may suffer long-term effects from the disturbance brought on by mining operations, including noise, sediment plumes, and habitat degradation, which may result in a loss of biodiversity and irreparable harm. Additionally, the island countries of the South Pacific strongly depend on their marine resources for both survival and cultural practises. Deep sea mining may jeopardise established fishing areas, harming local communities' livelihoods and sense of identity. Furthermore, nothing is known about the long-term effects of deep sea mining, such as how deep-sea sediment plumes could affect the water quality and marine food systems. The necessity for international cooperation and regulatory frameworks is an issue related to deep sea mining in the South Pacific Islands. Deep sea mining is not currently covered by any comprehensive legal framework. The duty of creating regulations has been given to the International Seabed Authority (ISA), but disagreements and worries among member nations have held down the procedure. To ensure the sustainable and ethical development of deep sea mining, it is essential to establish effective rules that strike a balance between commercial interests and environmental preservation.

With being said of the goods and ills of deep sea mining adventure in the South Pacific Island, this study would particularly delve to a case study of Cook Island's recent adventure into deep sea mining with establishment of a Statutory authority named -Cook Island Sea Bed Mining Authority. So this study would now proceed in the following section – first section would explain on the deep

sea minerals and pacific island nations, second section would explore the developmental drivers for seabed minerals, and the last section would provide an account of concluding observation with the case study of cook island that the statutory authority of deep sea mining are loosely crafted to prioritize seabed mining without proper strategy for build-back-better.

Deep Sea Minerals And The Pacific Islands Region

The Pacific Islands have a wealth of deep-sea mineral resources due to their extensive marine territories. These resources, which include cobalt-rich crusts, enormous sulphides on the seafloor, and polymetallic nodules, have drawn interest because of their potential economic value. They are also relevant to the expanding market for renewable energy technology. The deep-sea mineral opportunities in the Pacific Islands are examined in this study, with a focus on their prospective contributions to the market for renewable energy. On the ocean floor, deep-sea minerals are significant commodities that are frequently located in isolated and difficult-to-reach locations. Examples of polymetallic nodules that have high concentrations of copper, nickel, cobalt, and rare earth elements are shown in the figure. On the other hand, cobalt-rich crusts contain a high cobalt content, which is a crucial element in the manufacture of batteries for electric vehicles and renewable energy storage. Massive sulphides found on the seafloor are abundant in metals like copper, gold, and silver. Remotely operated vehicles (ROVs) and other cutting-edge technology are used to collect nodules or crusts from the seabed in order to harvest deep-sea minerals. Following collection, the materials are processed and refined on the surface. Due to the harsh circumstances in the deep sea, this method presents special technological and operational hurdles, but developments in robotics and engineering have made extraction more and more feasible.

For the Pacific Islands, deep-sea mineral mining offers a number of opportunities for economic growth. First off, the money made from mining operations can help these countries' economies grow and diversify. Numerous Pacific Island nations are heavily dependent on agriculture and tourism, both of which are susceptible to external shocks like natural catastrophes and climate change. Deep-sea mining offers a different source of income that can lessen reliance on these industries and increase overall economic resilience. Local communities may benefit from new job opportunities brought about by the growth of deep-sea mining businesses. Deep-sea mining operations involve a wide variety of talents and knowledge, from the preliminary exploration stage to extraction, processing, and shipment. Direct and indirect employment opportunities may result from this, boosting local economies and assisting in the eradication of poverty in the area.

The Pacific Islands are vulnerable to the effects of climate change, highly dependent on imported fossil fuels, and have limited access to energy in remote locations. In this regard, these countries place a high priority on the development of renewable energy sources. Deep-sea minerals are essential to the expansion of the Pacific Islands' market for renewable energy. Making batteries for energy storage devices is one important application for deep-sea minerals. The need for effective energy storage technology grows along with the demand for renewable energy sources like solar and wind power. Cobalt, one of the valuable metals found in crusts rich in cobalt found in deep oceans, is a key element in lithium-ion batteries used in electric vehicles and for the storage of renewable energy. The Pacific Islands can establish themselves as major providers of essential components for the market for renewable energy by gaining access to these deep-sea mineral riches. Additionally, the money made from deep-sea mining operations can be used to build infrastructure for renewable energy sources. Pacific Island countries have a lot of potential for the creation of renewable energy projects due to their plentiful geothermal, solar, and wind resources. Nevertheless, progress in this sector has been hampered by limited access to funding and technology. These countries may be able to invest in renewable energy projects, improve energy access, and lower greenhouse gas emissions thanks to the financial boost that deep-sea mineral mining can offer. While deep-sea minerals present prospects for economic growth and add to the market for renewable energy, a number of issues and factors need to be taken into account. Environmental issues are crucial since the exploitation of these resources may have a severe effect on biodiversity and marine ecosystems. In order to ensure ethical and sustainable mining practises, including the mitigation of potential effects on deep-sea habitats and species, it is crucial to build strong environmental management frameworks.

Cook Islands Economic Situation and Outlook: Driver For Seabed Minerals

Deep sea mining is being investigated by the Cook Islands, a country made up of 15 islands in the South Pacific, as a way to strengthen its economy and ensure its long-term financial viability. The Cook Islands Sea Mining Authority (CISMA) was established to monitor and control deep sea mining operations in its waters as a result of the country's economic situation, which is characterised by a significant reliance on tourism and scarce natural resources. Tourism is a key component of the Cook Islands' economy, yet it is highly reliant on external shocks like natural disasters and global economic downturns. The government has focused on the massive mineral riches located in its Exclusive Economic Zone (EEZ), which has an area of around 1.8 million square kilometres, after seeing the need to diversify its economic basis. These resources, which include rare earth elements and polymetallic nodules, have the potential to considerably boost the country's economic development. The Cook Islands Sea Mining Authority was set up by the Cook Islands government to efficiently administer and control deep sea mining operations. The management of the nation's deep-sea mineral exploration, exploitation, and processing falls within the purview of CISMA. Its duties include issuing licences, upholding safety and environmental laws, and guaranteeing a fair benefit-sharing arrangement for mining operations. There are numerous goals for CISMA's formation. First and foremost, it seeks to provide a strong regulatory framework for deep sea mining operations. The CISMA ensures that mining operations are carried out in a way that is environmentally sustainable, minimising potential effects on marine ecosystems and biodiversity. This strategy is in line with the Cook Islands' dedication to sustainable development and its responsibility as an ocean steward.

Deep sea mining project investment is greatly facilitated by CISMA. It inspires confidence in investors and motivates them to take part in the exploration and exploitation of the

Cook Islands' mineral resources by offering a trustworthy and open regulatory environment. In turn, this opens up possibilities for the country's economy to expand, jobs to be created, and technology to progress. In addition, CISMA makes it easier to form alliances and partnerships with international groups, academic institutions, and business professionals. These collaborations assist the Cook Islands gain more expertise and technological capacity for deep sea mining. The country can make informed judgements, put best practises into place, and guarantee that ethical mining practises are followed by exchanging knowledge and research. Deep sea mining in the Cook Islands has a substantial economic potential. Exploiting mineral resources can open up a new source of income and lessen the country's reliance on tourism. Additionally, it can support the growth of downstream businesses like manufacturing and mineral processing, resulting in job opportunities and promoting economic diversification. However, it is crucial to recognise the difficulties posed by deep sea mining. Efficient environmental impact assessments and monitoring programmes are required to handle environmental issues, such as the possible disruption of deep-sea ecosystems. The Cook Islands also need to make sure that local people and indigenous groups receive an equitable share of the advantages of deep sea mining.

The Cook Island Sea Bed Mining Authority (CISMA) shows the government's commitment to control and manage deep-sea mining activities in a way that safeguards the Cook Islands' pristine ecosystem. CISMA seeks to ensure responsible and sustainable mining practises by enacting appropriate regulations. However, the lack of a build-back-better provision raises worries about the possibility of irrevocable environmental harm in the Cook Islands. The ramifications of this provision and their impact on the preservation of the Cook Islands' natural resources are examined in this critical analysis. The build-back-better provision is a core idea in environmental governance that emphasises the need to restore and rehabilitate ecosystems to their pre-mining state or better. It protects against long-term or irreparable damage caused by mining activities. This provision intends to limit the potential environmental implications of deep-sea mining by mandating mining corporations to restore and rehabilitate the environment. The lack of a build-back-better clause in the CISMA Act raises worries about the level of environmental protection and the possibility of irrevocable damage to the Cook Islands. There is a risk that mining activities will have long-term or irreversible environmental repercussions if there is no clear mandate for firms to restore and rehabilitate the ecosystem. The Cook Islands' pristine ecology, defined by its distinct maritime habitats and biodiversity, must be preserved for future generations. The fact that deep-sea mining creates serious environmental dangers must be noted. Mining operations have the potential to destroy deep-sea habitats, disturb marine life, and produce sediment plumes that could have long-lasting consequences on water quality and marine food webs. The Cook Islands' natural resources could suffer irreparable harm, endangering the region's ecological balance and biodiversity, if the proper steps aren't taken to reduce these dangers and assure environmental restoration. Furthermore, the Cook Islands' economy's long-term viability is questioned by the absence of a build-back-better clause. The preservation of the islands' pristine environment is crucial for the tourism sector, which generates a significant portion of the country's income. Any considerable environmental harm brought on by deep-sea mining could have a negative impact on travel, possibly resulting in a drop in tourists and negative economic consequences for the country. It is essential to include a build-back-better clause in the CISMA Act in order to allay these worries and protect the Cook Islands' natural resources. With the help of this clause, mining corporations would be legally required to return the environment to its pre-mining state or to a better one. By doing this, the Cook Islands can balance economic growth with environmental protection, assuring the sustainability of both over the long term. A build-back-better clause can also improve the Cook Islands' standing as a trustworthy steward of its marine resources. It can attract ethical investors who place a high priority on environmental considerations and serve as a symbol of the country's commitment to environmental stewardship and sustainable development. By including this clause, the Cook Islands can serve as a role model for other countries that engage in deep-sea mining, showing that economic development and environmental protection are compatible goals.

Concluding observation

This study on careful examination on the high frequency of deep sea mining prospects in South Pacific Island with case study of Cook island. This study analysed the priorities which plays a level field to facilitate the deep sea mining by arguing that Deep sea mining is a complicated and divisive issue in the South Pacific Islands. The environmental and socioeconomic issues cannot be ignored, despite the fact that it may provide prospective economic benefits and a substitute for land-based mining. To negotiate the difficulties and guarantee the protection of the special marine ecosystems and the welfare of the regional communities in the South Pacific Islands, a careful and science-based approach, transparent legislation, and stakeholder involvement are required. The extraction and utilisation of these priceless resources can help Pacific Island economies diversify, expand economically, and create jobs. Furthermore, the Pacific Islands are positioned as significant players in the developing renewable energy market thanks to the crucial role deep-sea minerals like cobalt play in the manufacture of batteries for renewable energy storage systems. To ensure ethical and sustainable deep-sea mining practises, it is essential to address environmental issues and put in place strong governance frameworks. The Pacific Islands can take use of deep-sea minerals while protecting their distinctive marine ecosystems and advancing the transition to a more sustainable energy future by finding the proper balance. The economic situation in the Cook Islands, which is characterised by its heaviest reliance on tourism, has made it possible to explore and potentially extract deep sea minerals. The Cook Islands' dedication to ethical and sustainable deep sea mining practises is reflected in the creation of the Cook Islands Sea Mining Authority. The Cook Islands wants to take advantage of the economic possibilities of deep sea mining while protecting the environment and guaranteeing equitable benefit-sharing. To do this, they are creating a legislative framework, luring investment, and encouraging partnerships. Deep sea mining can support the Cook Islands' long-term economic growth and financial sustainability with careful planning and good administration.

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