FORUM: United Nations Environment Assembly

QUESTION OF: Developing guidelines for deep sea mining with regard to practices that cause environmental issues

STUDENT OFFICER: Srilakshmi Chidambaram

POSITION: Chairperson

INTRODUCTION

All life on earth is dependent on oceans. They take up more than 70% of the world's surface area and are responsible for providing us many sources of nutrition and raw material. They also house thousands of marine species, 91% of which have yet to be studied and classified.

Oceans absorb more than 50 times more carbon than the atmosphere, most of which comes from burning fossil fuels. They provide $21 trillion in food and benefits every year, and millions of people rely on the fishing industry for jobs as well as food. The ocean also lures tourists from all over the world and generates a steady source of employment and cash flow for local economies.

Oceans are found to moderate temperature, absorbing heat and regulating our climate and weather patterns.

In conclusion, the sea gives us a lot, whether it be transportation lines, economic benefits, the air we breathe or the food we eat. We do not really give a lot back for what we take. Most of our actions have had deleterious effects, like chronic pollution caused by the mass disposal of plastics, oil spills and the outflow of untreated wastewater. In the process, we have endangered various marine species and killed off giant swathes of coral reef.

A more recent exploit of greed that has the potential of ruining our already damaged marine ecosystems is deep sea mining. Various environmental advocacy groups like Greenpeace and the Deep-sea Mining Campaign have spoken out about the disastrous consequences of deep-sea mining, the negative effects it could have on deep-sea ecosystems and the pollution that could be caused by heavy metal plumes.

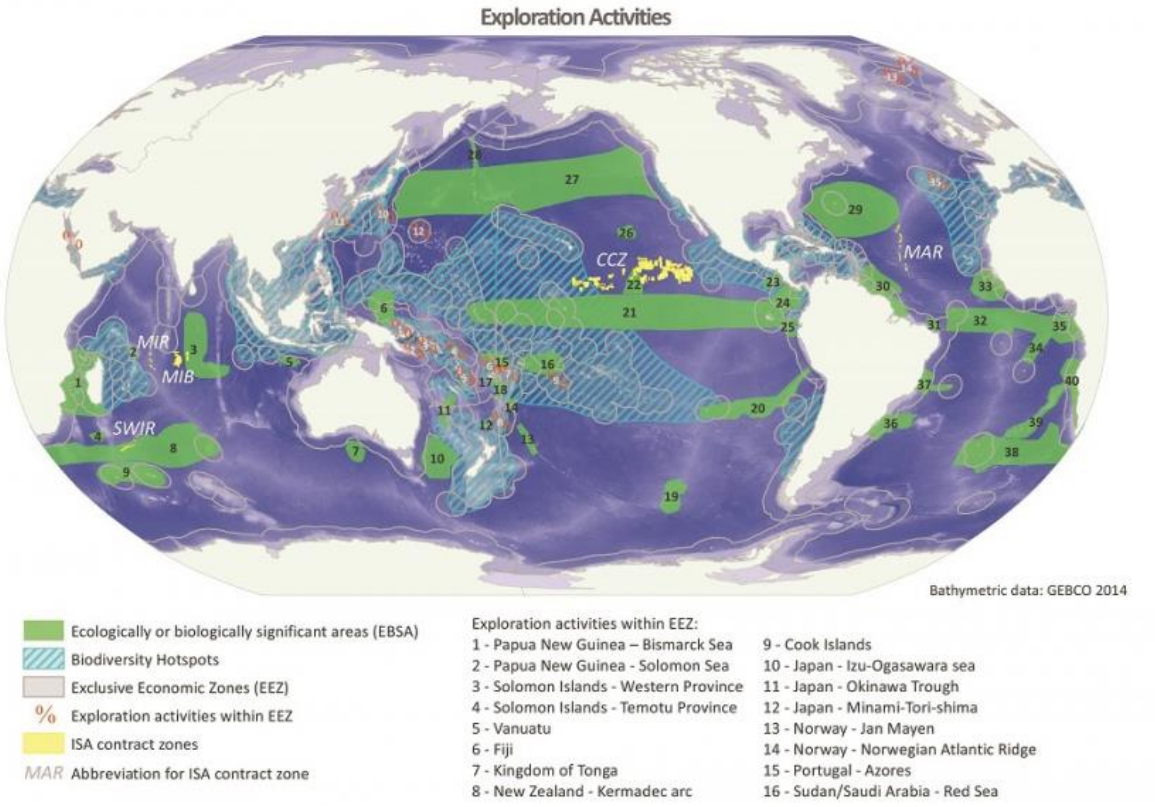
In this meeting of the UNEA, we will study the demand and consider the impact of deep-sea mining. After much discussion and debate, you will be responsible for establishing guidelines for it. I look forward to meeting all of you and listening to your opinions in committee.

BACKGROUND INFORMATION

Deep sea mining has been garnering a lot of interest in recent years due to depleting terrestrial deposits such as copper, nickel, aluminium, manganese, zinc, lithium and cobalt. There is also a rising demand for technology that uses these metals in their production process, like smartphones, electronic chips, wind turbines, solar panels and electric storage batteries.

The focus is currently on exploration of the deep sea, assessing the size and spread of prospective mineral deposits. The International Seabed Authority (ISA) ended up issuing 29 contracts for exploration of deep-sea mineral deposits by 2018. More than 1.5 million square kilometres of international seabed has been set aside for scouting expeditions and mineral exploration in the Pacific and Indian oceans, as well as some areas along the Mid-Atlantic Ridge.

What may seem like innocent exploration expeditions may soon give way to exploitation. Commercial mining in Papua New Guinea’s national waters is predicted to begin soon, and mining in international waters is expected to start in 2025.



BRIEF HISTORY

The original idea of deep-sea mining was brought up in a publication titled ‘Mineral Resources of the Sea’ in the 1960s. The book claimed that the oceanic crust had boundless reserves of cobalt, nickel and other metals, usually occurring in deposits of manganese nodules at depths of about 5000m. Some nations decided to scout for these nodule deposits, but the initial estimates of the viability of deep-sea mining turned out to be wildly exaggerated. This, along with depressed metal prices, made nodule mining unprofitable at the time. The prospect was nearly abandoned by 1982.

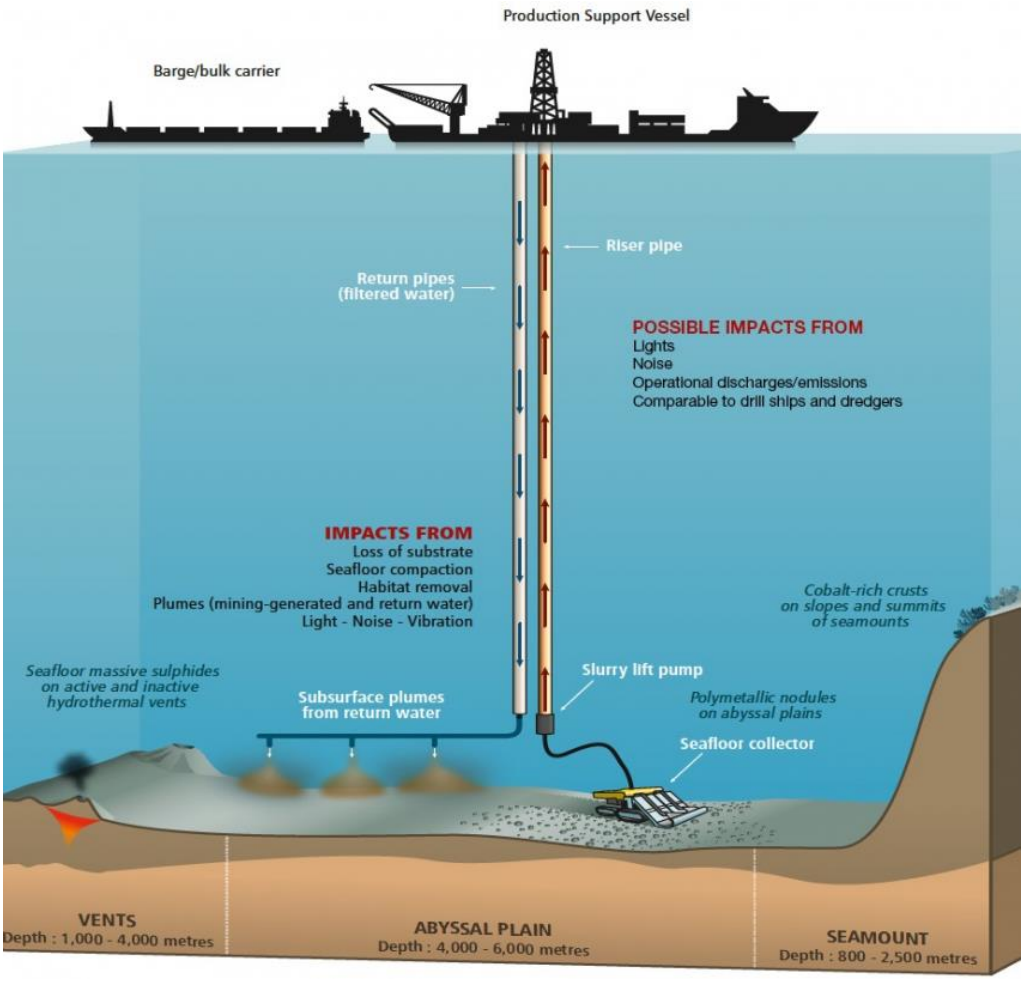
The past decade has seen a new phase of deep-sea mining. This has been largely due to rising demands for depleting precious metals, particularly in countries like Japan, Korea, China and India. There has been growing interest in sourcing metals from hydrothermal vents instead of isolated nodules. Precious metals are in high demand as societies transition to electricity-based systems for all kinds of infrastructure. Mining for phosphorous nodules is also being considered, since it is needed in huge amounts for the manufacture of chemical fertilizers.

METHODS OF EXTRACTION

Remotely operated vehicles (ROVs) are often used to collect samples from mine sites. These vehicles use drills and cutting tools to obtain mineral samples that are later sent to be analysed. Once a site has been prospected, a mining ship or station is set up to mine the area.

The two major forms of extraction under consideration for full scale operations are the continuous line bucket system (CLB) and the hydraulic suction system. CLB is preferred for nodule collection. It is similar to a giant conveyor belt, running from sea floor to surface where a ship extracts the minerals and disposes the tailings. Hydraulic suction mining uses a pipe to transfer nodules from the seafloor to the mining platform.

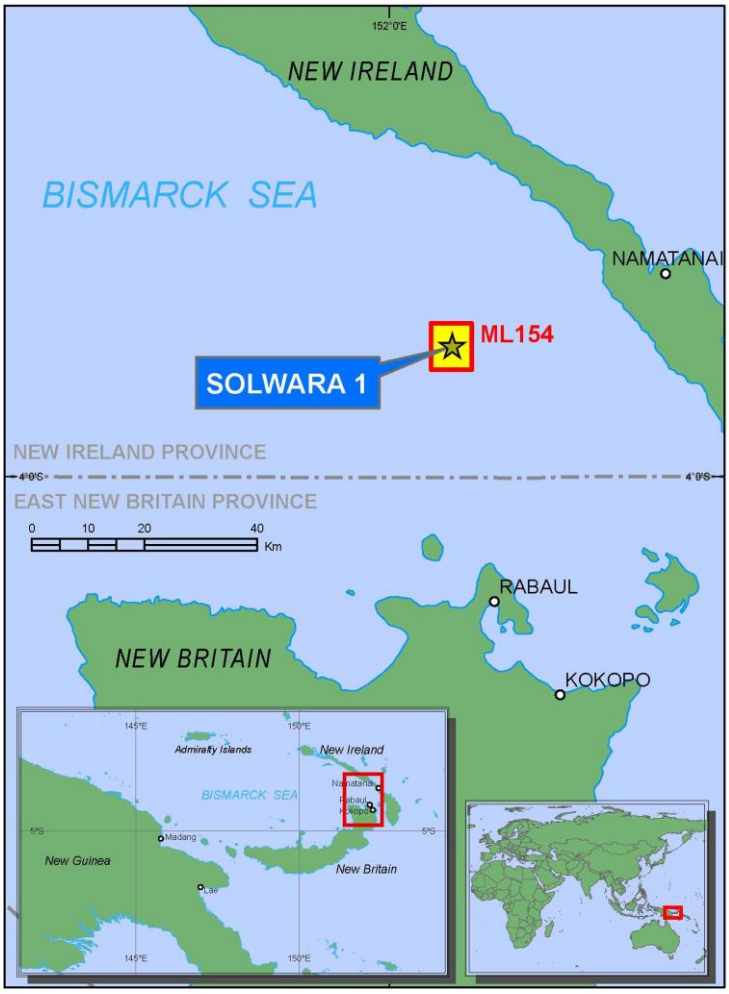
Promising mining areas have been scouted in the Central and Eastern Manus Basin around Papua New Guinea and the crater of the Conical Seamount to the east. These locations show large amounts of gold in the area's sulphur deposits (26 ppm). The shallow depth and close proximity of processing plants deems this site to be an excellent mining operation.



SOLWARA 1

Solwara 1 is currently the best potential deep-sea site in the waters near Papua New Guinea. It is listed as a high-grade copper-gold resource and the world's first Seafloor Massive Sulphide (SMS) resource. It is located at 1600 m below the water surface in the Bismarck Sea.

Nautilus Minerals Inc. is the first company to announce intentions to start full-scale excavations of mineral deposits. It is backed by UK-based company Soil Machine Dynamics who developed the required ROV technology. Minerals mined here belong to Papua New Guinea, under international law.



WHY IS THIS ISSUE IMPORTANT?

The seafloor covers a vast array of geological features. These are created by common physical phenomena, primarily from tectonic movement and deposition of sediments. Sediments are usually deposited from various sources: land erosion from rivers, volcanic ash, microorganisms, sea currents and marine life.

Some of these features include the abyssal and hadopelagic plains (3500 – 10,000m below sea surface), seamounts, brine pools, cold seeps, hydrothermal vents and deep trenches.

These remote areas support species that are uniquely adapted to harsh conditions, such as the total lack of sunlight and extremely high pressure. Many of these species are still undiscovered, completely unknown to science.

The deep sea remains poorly mapped or studied, we know very little about its biodiversity and ecosystems. This makes it difficult to assess the effects of deep-sea mining and establish safeguards to protect the marine seabed.

Research has shown that removal of certain parts of the seabed will result in disturbances to the benthic layer, increased toxicity of the water column and sediment plumes from tailings.

Among all these effects, sediment plumes could have the worst impact. They have the potential of damaging entire local ecosystems on the seafloor and the pelagic zones above them. It is unclear how far these particles may disperse or how long they would take to resettle, but it is definitive that they could cause substantial harm to filter feeding species that depend on clean, clear water to feed, such as krill and whale sharks.

It is important to remember that most benthic organisms are endemic, meaning that they do not occur anywhere else on the planet. Physical disturbances in one mining site could wipe out an entire species.

There is also the risk of leaks and corrosion that could potentially alter the chemical composition of the water and the sediment surrounding mining areas. Whales, sharks and shoals could be affected by noise, vibrations and light pollution caused by mining equipment and surface vessels. Spills of fuel and toxic effluents are also significant threats to species survival.

Chrysomallon squamiferum (also known as sea pangolin or scaly-foot snail) is a marine gastropod mollusc that dwells at the bottom of the Indian Ocean. In 2019, it became the first

species to be listed as endangered on the IUCN Red List due to risks from deep-sea mining in its hydrothermal vent habitats.

WHO STANDS TO PROFIT?

The companies and governing agencies that stand to profit from mining activities are based in the United States, Canada, Europe and Asia. They are geographically, politically and economically isolated from the small island nations that will bear all the ill-fated consequences of their decisions. While government leaders may welcome mining for economic gain, it is the indigenous people, tribes and local communities who should be weighing the choices. Unfortunately, their voices have been stifled. Their opinions have been ignored in international discussions, even though the results will determine their futures for generations to come.

DEFINITION OF KEY TERMS

DEEP SEA MINING

Process of retrieving mineral deposits from the deep sea, the area of the ocean below 200 m.

PLUMES

Created when the tailings from mining are dumped back into the ocean, creating clouds of dusty particles in the water. There are two types of plume: near bottom plumes and surface plumes.

NEAR BOTTOM PLUMES

Occur when tailings are pumped back down to the mining site. These particles increase water turbidity and clog up the filter feeding apparatuses of benthic organisms.

SURFACE PLUMES

The more serious of the two. They can spread over huge areas, depending on the size of the particle and the direction of water currents. These plumes decrease light penetration in the epipelagic zone, affecting the growth of phytoplankton and eventually the rest of the marine food web.

POLYMETALLIC NODULES

They are also called manganese nodules, rock concretions on the sea bottom formed of concentric layers of iron and manganese hydroxides around a core.

HYDROTHERMAL VENTS

A fissure on the sea floor that emits geothermally heated water. Commonly found near volcanically active places, areas of tectonic shift, ocean basins and hotspots. They are rich in rock and mineral ore deposits.

HOTSPOTS

Volcanic regions fed by the underlying mantle. Examples include Hawaii, Iceland and Yellowstone.

EXCLUSIVE ECONOMIC ZONE

Sea zone prescribed by the UNCLOS in 1982 over which a sovereign state has special rights regarding exploration and exploitation of marine resources.

INTERNATIONAL SEABED AUTHORITY

An intergovernmental body based in Jamaica that was established to organize, regulate and control all mineral related activities in the international seabed area beyond limits of national jurisdiction.

TAILINGS

Materials left over after the process of separating gangue from ore.

BENTHIC ZONE

Ecological zone at the lowest level of a water body including the sediment and sub-surface layers.

BATHYMETRY

Study of underwater depth of ocean floors and geological terrain

ABYSSOPELAGIC ZONE

A layer of the pelagic zone on the ocean, 3000 – 6000 m in depth. It remains in perpetual darkness

HADOPELAGIC ZONE

Deepest region of the ocean lying within oceanic trenches, 6000 – 11,000 m in depth

EXISTING TREATIES AND CONVENTIONS

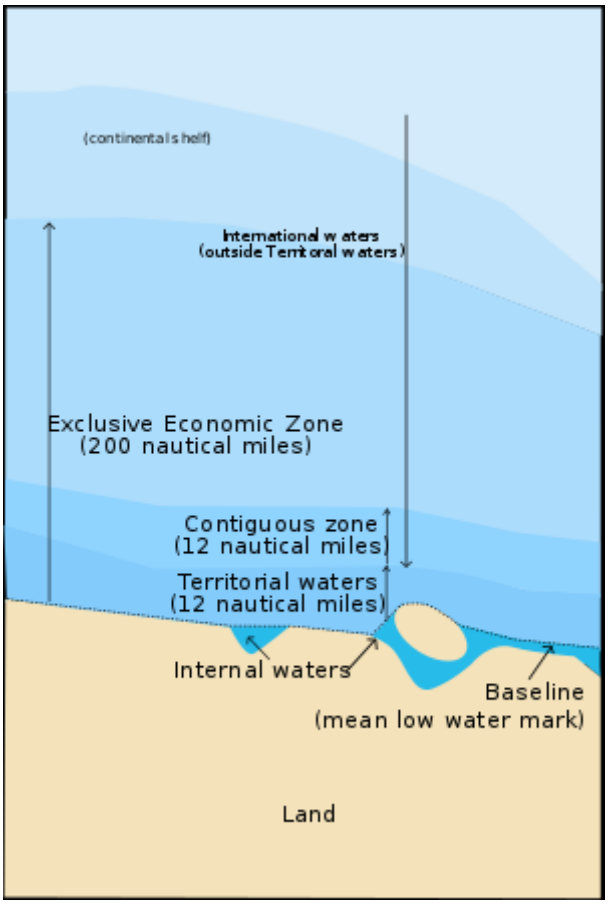
UNITED NATIONS CONVENTION ON THE LAW OF SEA (UNCLOS)

An international agreement that defines the rights and responsibilities of nations with respect to their use of the world's oceans. It establishes guidelines for businesses, the environment and the management of marine resources, among other things.

UNCLOS III

Apart from sorting out issues on varying claims of territorial waters through a consensus vote, UNCLOS III also introduced a number of provisions on setting geographical limits, navigation, archipelagic status, exclusive economic zones (EEZs), continental shelf jurisdiction, deep seabed mining, resource exploitation, environmental protection and scope for scientific research.

The convention also set a limit of baselines to set the limits of various areas: internal waters, territorial waters, archipelagic waters, contiguous zone, exclusive economic areas and continental shelf.



PART IX AND 1994 AGREEMENT

Part IX of the convention deals with mineral resources in the seabed outside territorial waters and economic zones. It also established an ISA (International Seabed Authority) to authorize seabed exploration and mining, as well as the collection and distribution of seabed mining royalties.

The USA opposed this convention due to conflicting national interests and refused to ratify it, though it agreed with other provisions of the UNCLOS.

PART XII

Part XII of the UNCLOS contains provisions for protecting the marine environment, requiring all member states to operate according to international environmental regulations, such as those adopted by the IMO.

QUESTIONS DELEGATES SHOULD ANSWER

1. What is my nation's status and prestige in the UN like? What role and influence does it have in the global arena?
2. How can I help establish comprehensive guidelines for deep-sea mining?
3. How can I ensure that marine ecosystems are unharmed during the mining process?
4. How can I make sure that biodiversity hotspots, national parks and marine reserves are not threatened by deep-sea mining?
5. Are there ways to ensure that the exploitation of marine mineral reserves does not take place?
6. Do I know about important resolutions and how my country voted on them or other actions of my nation on this topic?
7. What are my country's mineral resources and geopolitical significance and implications?
8. Is my country involved in any deep-sea mining projects?
9. What are my nation's general policies and particular views on the agenda?
10. Does my country have sustainable mineral resources?
11. What is my state's stance regarding deep sea mining?

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