



Deep Sea Mining

Questions and Answers

An Oceans and Communities Fact Sheet

What is Deep Sea Mining?

In the 1970s, mining companies, responding to rising metal prices and the desire to secure strategic mineral supplies, began eyeing the ocean floors as a new source of raw materials, primarily focusing on manganese nodules.

This new wave of mining did not materialize because of a combination of the high projected costs of deep sea mining and a progressive regulatory regime under the United Nations that ensured shared economic benefits for the developing world and strong environmental protections when mining occurred in international waters.

However, now a Canadian-based mining company, Nautilus Minerals, is poised to begin the world's first undersea mining by overcoming these barriers – through advances in technology that make deep sea mining feasible and by avoiding international regulatory regimes that promote equity and environmental protection by launching its efforts in Papua New Guinea where regulations do not exist to manage and oversee deep sea mining.

The deep sea mining operations, targeting gold, silver, copper and nickel, will involve the direct removal of valuable mineral deposits. Unlike terrestrial mines, there is little or no overburden (sediments that lay on top of the deposits) associated with deep sea minerals. Using remotely operated underwater mine cutters and a hydraulic pump system, the miners will scour the top 20 meters of the seafloor and transfer two million tons of ore annually to the surface which will then be processed at onshore facilities. The mines would be located approximately 500 meters to two kilometers from active hydrothermal vents communities, which contain many organisms that are relatively new to science and which constitute one of the few ecosystems on earth that do not depend on energy from the sun.

What Rules Regulate Deep Sea Mining?

The International Seabed Authority, a body of the United Nations, regulates mining in international waters. One of the main equity controls that the ISA applies is that there has to be either a percentage national ownership of the mine or that a percentage of the product or revenues is shared. Another function of the ISA is to ensure that the marine environment is protected from any harmful effects which may arise during mining activities. One such measure being proposed is marine protected areas on the ocean floor.

Unfortunately many countries where Nautilus and other companies are beginning the first wave of deep sea mining have not formulated regulations specific to this new industry.

What are the Potential Environmental Impacts of Deep Sea Mining?

While there have not been adequate studies to determine the potential impacts of deep sea mining on the ocean floor and ecosystem, scientists have begun describing what the impacts might be to help regulators and the public better understand the potential price of this new industrial activity on our oceans.

Dispersal of fine sediments

The mining on the ocean floor through cutting and pumping will almost certainly suspend some fine sediments into the water. This fine sediment could cause problems for species that feed by filtering water. These species include a variety of clams and mussels including those that inhabit hydrothermal vent communities.

Additionally, during the process of transporting the ore from the ocean floor to processing plants onshore there is the potential for spills, such as when the ore is transferred from boat to boat. Fine sediment in the upper levels of the ocean can interfere with photosynthesis. These plumes could also drift and potentially impact near shore habitat such as coral reefs.

Destruction of habitat

The deep sea ocean floor is truly one of the last explored habitats on earth, and we do not fully understand the impacts of our actions on these ecosystems. For example, only a tiny fraction of the deep sea floor has been biologically sampled. Additionally, since 50% of the animals collected from 3000 meters are new to science, mining activity may result in a loss of species, including some that may not have yet been discovered.

Nutrient displacement

Deep sea mining potentially could bring the nutrients from the ocean floor to relatively nutrient-poor surface waters, causing algal blooms and impacting the food chain and coastal communities that depend on healthy fish stocks and coral reefs, which are particularly vulnerable to sediment and nutrient pollution. Further, these nutrients could drift into international waters on ocean currents, causing widespread impacts.

Other pollution

Additionally, there will still be waste generation from onshore processing and concentrating of ore which potentially will impact the near shore environment and coastal communities. Further, there have no studies on the impacts of noise pollution from the cutting on the marine environment.

What are the Potential Impacts on Coastal Communities?

While Nautilus Minerals is quick to argue that there will be widespread economic benefits in Papua New Guinea, the same claim was made for land-based mining and other extractive industries and has not been borne out by experience. Wealth would almost certainly be generated, but it is unclear how that wealth would be distributed. Moreover, many coastal communities have lived for generations under a resource-rich, rather than cash-rich, economy. In many ways, rich natural resources are a social safety net, supplying food, livelihoods, and security. Industrial activities in the ocean, such as deep sea mining, could erode this long term economic base, diminish food supply, and poison the environment with pollution.