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Deep-sea Mining: An Emerging Marine Industry

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Abstract

Deep-sea mining is an emerging marine industry that presents particularly complex challenges due to its multi-faceted technological, scientific, environmental, social, industrial, political, economic and legal aspects, all of which must be addressed to achieve commercially viable results. These aspects are governed by the burgeoning regulatory regime promulgated by the International Seabed Authority, with consequent effects on operating conditions. This presentation describes the three principal deep-sea metal-bearing hard mineral deposits that are of the most immediate interest to the deep-sea mining industry, i.e., ferro-manganese (Fe-Mn) nodules, cobalt (Co)-rich Fe-Mn crusts and polymetallic sulphides, and their distinctive biogeophysical marine environments (abyssal sediments, seamount flanks, and hydrothermal vents, respectively), and presents an overview of their resource interest, extraction technologies, technical and environmental issues and international regulatory context, together with examples of innovative responses to these myriad challenges.

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