Challenges of Deep Sea Mining in the Pacific

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With the depletion of many terrestrial mineral deposits, the mining industry is beginning to set its sights on minerals on and under the ocean floor. Growing demand for deep sea mineral deposits in the Pacific Ocean provide developing island states in the Pacific with opportunity for economic development. However, the World Bank has advised precautionary management of DSMM due to “unknown associated risks”.[[1]](#footnote-1) The Secretariat of the Pacific has likewise noted that DSMM may contribute to the ‘resource curse’ if it is not adequately managed.[[2]](#footnote-2) This risk extends to not only the environment but also to social systems in locally effected communities. Consequently, governments and mining companies must consider management of issues such as access to the ocean, and customary land (and water) rights. This paper provides a background to the emergence of DSMM, outlines some of the potential positive and negative impacts of DSMM, and highlights the challenges these pose.

Deep sea mineral deposits are a potential source of metals in high demand for modern technologies.[[3]](#footnote-3) Exploration of the deep sea floor has revealed concentrations of rare earth elements (REEs) that are in high demand for renewable energy systems including wind turbines and solar cells; military technology; and electronics.[[4]](#footnote-4) The Pacific Ocean has a high density of deep sea mineral deposits due to the impact of seismic activity on ocean geology. This makes it a potentially valuable source of REEs and other materials. Many REE deposits are located within the economic exclusion zones (EEZ) of Pacific Island countries (PICs).[[5]](#footnote-5) PICs have ownership of the ocean floor within their EEZ, and can therefore grant mining exploration and extraction licenses, and govern mining activity within this region.[[6]](#footnote-6)

The global demand for REEs is expected to increase as these industries grow and diversify.[[7]](#footnote-7) Ironically, the global interest in renewable energy systems as a means of sustainable development and carbon reductions is dependent on ongoing extraction of REEs. There is a scarcity of economically viable REE deposits in terrestrial environments. As ocean mineral deposits have comparatively higher mineral ore concentration, they potentially offer an economically viable source of REEs.[[8]](#footnote-8) However, there are challenges to accessing this resource potential: initial industry investment is high, the environmental impacts are largely unknown, and regional frameworks for state DSMM legislation is still in its infancy.[[9]](#footnote-9)

Papua New Guinea is currently the only state to have issued an exploitation license on its deep sea floor. It does not have DSMM legislation in place, but is currently reviewing existing mining laws and mineral policies to incorporate DSMM.[[10]](#footnote-10) The exploitation license grants Canadian company Nautilus mining rights within a 14-hectare region- known as Solwara 1- in the Bismarck Sea for gold and copper ore.[[11]](#footnote-11) Although this site is offshore, local community groups are claiming traditional ownership over the deep sea floor. The state of Papua New Guinea does not recognise customary ownership claims to the site.[[12]](#footnote-12) Nautilus is therefore under no obligation to obtain a social license to operate as legally, there is no affected community. This raises new challenges for the future of domestic ocean management, and the role of coastal community stakeholders in the emerging DSMM industry.

The Pacific generally, and PNG specifically has a history of economic resource dependency, which has led to environmental devastation and limited overall progress of human development.[[13]](#footnote-13) Inadequate DSMM regulatory frameworks and policy, along with the inherent challenges of managing a “sharp influx of revenue” is likely to perpetuate this cycle.[[14]](#footnote-14) The Solwara 1 Project has been heralded as opportunity for economic growth, job creation, and human development in the Pacific, but has been opposed by environmentalists and local coastal communities.[[15]](#footnote-15) The novelty of DSMM means that states can identify social, economic and environmental risks, and modify mineral mining policies accordingly.[[16]](#footnote-16)

The potential adverse impact of DSMM on domestic ocean management, environmental systems and local community rights must be weighed against its potential benefits, including the role it could play in renewable energy development, carbon reduction, and technological advancements. The development of Solwara 1 is raising local concern about customary land (and water) tenure, community rights to space, and the relevance of the social license in the DSMM context. Nevertheless, Nautilus’ Solwara 1 Project is a ground-breaking real-life experiment of the feasibility of deep sea mineral mining, and is likely to become a reference point for similar endeavours into the future. The next article will further explore the impact of deep sea mineral mining on local coastal communities and the social license to operate.

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6. Mineral Policy Institute *“Management of DSM”* (2014). <http://www.mpi.org.au/issues/deep-sea-mining/precationary-management-of-deep-sea-mining/> [↑](#footnote-ref-6)
7. The World Bank “*Precautionary Management of Deep Sea Mining Potential in Pacific Island Countries”* (2016). [↑](#footnote-ref-7)
8. Ibid. [↑](#footnote-ref-8)
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10. The World Bank “*Precaution Management of Deep Sea Mining Potential in Pacific Island Countries”* (2016). <http://pubdocs.worldbank.org/en/125321460949939983/Pacific-Possible-Deep-Sea-Mining.pdf> [↑](#footnote-ref-10)
11. Helen Rosenbaum and Francis Grey “*Accountability Zero: A Critique of Nautilus Minerals Environmental and Social Benchmarking Analysis of the Solwara 1 Project”* (2015). <http://www.deepseaminingoutofourdepth.org/wp-content/uploads/accountabilityZERO_web.pdf> [↑](#footnote-ref-11)
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16. Ibid. [↑](#footnote-ref-16)