

Joint summary of the reports prepared by CRU and RMG Consulting relating to a Comparative Analysis of the Financial Aspects of Seabed Mining and Land-Based Mining

I. Background

1. Upon a request from the Council of the International Seabed Authority at its meetings in February 2020, the Secretariat contracted CRU and RMG Consulting in April 2020 to prepare two complementing parts of a comparative analysis of the financial aspects of seabed mining and land-based mining in order to assist the Council to develop an appropriate payment mechanism that would fulfil the requirements of the UN Convention on the Law of the Sea and the Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982.

2. CRU and RMG Consulting have each separately prepared full written reports which were based on desk top research and also input, comments and questions received during three interactive informal webinars with members of the International Seabed Authority, observers and contractors with the Authority in early June 2020.¹

3. This joint summary report, which is structured around the scope of the study as identified by the Council, is intended to present the main conclusions from our joint work and as an input to the ongoing deliberations of the Open-Ended Working Group of the Council on financial aspects of a contract concerning these issues.

II. Comparative analysis of fiscal regimes in 15 countries

4. The contribution to humankind of the metals contained in polymetallic nodules is divided into two major parts: the metal itself and the mineral rent created when mining and beneficiating the metal. The purpose of the fiscal regime is to capture a suitable part of the mineral rent for the International Seabed Authority (representing humankind) while allowing the investor to retain a share big enough to create an economic incentive to make an investment.

5. Based on a comparative analysis of 15 countries accounting for a large share of global production of the four metals contained in nodules: cobalt, copper, manganese and nickel, a royalty system is recommended. Royalty systems are used all over the world, are transparent and easy to administer. Royalty rates vary from 2-3 % up to 10-12 % depending on a range of factors. In the context of national jurisdiction, a mineral rent tax could be a theoretical alternative but such a tax is not widely employed and hence there are only limited experiences of its use.

6. Limited administrative fees for exploration and mining permits are commonly levied in order to cover costs incurred by regulators and to ensure that exploration and mining are

¹ The webinars were held on 9, 11 and 12 June 2020: for more information see, <https://www.isa.org.jm/news/isa-host-webinars-comparative-analysis-financial-aspects-seabed-mining-and-land-based-mining>; the presentations by the consultants are available at: https://isa.org.jm/files/files/documents/4thCWG_0.pdf

done effectively and continuously. Administrative fees are not a relevant factor in considering a seabed payments regime.

7. Corporate income tax (CIT) is a tax on profits made by companies. Royalty is a compensation to a rights holder for extracting a mineral, in this case the Seabed Authority on behalf of all humankind. Royalty- and CIT-rates are completely unrelated in theory and also in practice. No government sets a royalty rate depending on the prevailing CIT rate or the effective tax rate or the other way around. CIT rates and royalty rates are set in separate processes. Comparison of royalty regimes for seabed mining with land based mining should thus not include CIT, and CIT should not be a factor of importance when considering a fiscal regime for the Authority.

8. Very few countries use environmental levies, i.e. charges for environmentally harmful emissions, as an instrument for mitigation of potential environmental damage. Instead emission levels are prescribed, which the miner has to meet by investing in technology, and to avoid problems if a mining company for any reason cannot fulfil its obligations the company is to set aside funds for such events. A similar regime seems suitable for deep sea bed mining in particular considering the many technological and economic uncertainties surrounding these projects today. In this regard, it is understood that the draft regulations already contemplate environmental standards as well requirements for insurance and environmental guarantees to cover the cost of closure plans. The specific environmental levy proposed in the case of ISA is to support an environmental compensation fund which could be used to meet uninsured losses in future. There is no direct analog of such a fund in the case of land-based mining. The ISA secretariat has is preparing a study on such a fund.

III. Determining an appropriate nodule valuation basis

9. The value basis and royalty rate are inter-dependent, and cannot be fully assessed independent of each other. In the absence of market prices or comparable transactions, there is not a single 'correct' approach for valuing the metal content of the nodules; different approaches exist that meet different needs. The approach that is most appropriate as the basis for determining a royalty is one that is transparent, easily monitored, provides an appropriate return and meets other administrative and return parameters that the Authority might have, e.g. exposure to price risk vs. consistency of returns. Importantly, it should also reflect the proportion of value that must be added at the processing stage, so as to avoid unduly burdening the nodule collector. CRU believes that the appropriate metric for measuring the burden of such a royalty should be a percentage of the full collector costs (i.e. operating costs plus return on capital). CRU believes that using Net Smelter Return (NSR) as a valuation basis provides a good middle ground of minimising administrative complexity, allowing a fair valuation of nodules between collector and processor, and accepting price exposure. It also has land-based mining precedent in use in royalties owned by mining rights holders and those held by private parties. We note that net revenue streams from each metal contained in the nodule need to be calculated separately. A determination of nodule metal content value using NSR would be dependent on receipt of data from the processor. If that is not practicable in this case, it could be reasonable to use a gross metal content value basis, provided that the royalty rate applied provides for an equivalent burden on the collector. The gross value basis has the advantage of being simple and transparent.

However, as noted below, manganese presents a challenge as there is not currently clarity on an appropriate reference price to use to determine the value of the nodule manganese content - unlike nickel, copper, and cobalt – because the manganese product form and value relative to benchmark prices remains highly uncertain.

IV. Conclusions

10. In order to establish the effective tax rate of a mineral tax regime *all* taxes levied on a model mining operation over its entire life from exploration to closure should be considered in order to obtain a true effective tax rate.

11. Four systems of payments have been advanced in the context of the open-ended working group and have been considered in the financial model prepared by MIT:

1. Fixed rate ad valorem only royalty;
2. Two staged (in time) ad valorem only royalty;
3. Combined ad valorem royalty and profit-based system;
4. Progressive ad valorem royalty only.

12. The trade-off between administrative capacity and cost versus optimal and stable revenue for the Authority over time and transparency and fairness of the payments regime for deep seabed mining companies moves us to indicate a preference for a royalty system based on an ad valorem royalty for three of metals concerned (cobalt, copper and nickel). For manganese, an appropriate ad valorem royalty burden is difficult to determine due to substantial uncertainty around the product form and realisable price when sold by the processor. An alternative approach while this uncertainty remains could involve a volume based royalty for the manganese content of the nodules. The royalty rates for cobalt, copper and nickel could either be separate for each of the metals or the same for all three. One possibility to simplify royalty calculations could be to use the same royalty rate for cobalt, copper and nickel provided this does not significantly change the total amount of royalties paid compared to a model with separate royalty rates.

13. Which of these two alternatives to chose should be discussed further before a decision can be made. The additional advantages of using a profit based royalty or a resource rent tax in terms of an objectively more correct tax level is outweighed by loss of transparency, issues in calculating the resource rent tax, need for extensive expansion of the capacity and skills of the Authority and the fact that such systems are not generally used in on-land mining countries.

14. The royalty system should reflect the proportion of nodule metal content value that must be added at the processing stage, so as to avoid unduly burdening the nodule collector.

15. The nodule value basis used as part of preliminary calculations to determine an appropriate overall royalty burden does not necessarily need to be the same as the valuation basis used in practice, provided the royalty burden remains the same, i.e. the royalty rate is adjusted to offset the difference in value against which it is being applied.

16. The MIT approach to modelling royalty regime payments assumes a theoretical value for the nodule at the point that provides for an equal rate of return at both the collector and processor. This is essentially an attempt to model the midpoint of the nodule value bargaining zone between the two parties; a pricing theory that is described in more detail in the CRU report. The MIT nodule value calculation methodology is likely not suitable for use in the actual administration of the royalty; and indeed our understanding is that this methodology would not be used to calculate the nodule value for the purpose of extracting royalty payments in practice.

17. Nonetheless, as we understand it, the MIT theory provides a reasonable approach for the determination of a fair value price for the nodule based on currently available information, and allows for the collector royalty burden to be modelled under different scenarios. It is not unreasonable to then translate this burden into an equivalent payment using a more practicable value basis (with the change in value offset by adjusting the royalty rate accordingly), such as gross metal content, for the actual administration of the royalty when operation begins. We note, however, that estimates of operating and capital costs at both the collector and processor, which significantly influence the MIT model calculations, have a potentially large margin of error at present, which could distort the modelled nodule value and over- or underestimate the burden on the collector; therefore the possibility of re-evaluation of the agreed upon royalty rates as more accurate cost information becomes available should be considered. Furthermore, neither CRU nor RMG have conducted a full audit of the MIT model, and so cannot comment specifically on the reasonableness of any cost, price or other inputs used.

18. The treatment of manganese represents a particular challenge from a valuation perspective. There is a very large amount of uncertainty around the product form, realised sales price relative to transparent benchmark price series, and conversion costs for the manganese contained in the nodule; much larger than for the other metals in the nodule. Risks around price and royalty return are to the downside, due to possible value in use discounts on MRS² relative to benchmark grades of manganese ore, as well as price cuts that could be required in order to grow market share, given the large potential volumes of material to be sold. One possible approach to mitigating this uncertainty would be the use of a *specific* royalty, i.e. a royalty charged as a function of the volume of manganese contained, as opposed to a function of its estimated value. This would provide a guaranteed return to the royalty holder for the value of the manganese contained in the nodule while such uncertainty remains around the processing, product form, and realisable price. However, we note that specific royalties are more typically applied to low value mined materials such as industrial minerals, and very rarely applied to manganese ore in land-based operations. In practice, the value of the manganese product(s) sold by the processor will become more transparent after the operation commences. At this point, an ad valorem royalty could be more easily applied. Whichever royalty system is applied to the manganese should be re-evaluated to ensure it is providing an appropriate royalty return, particularly if any alterations are made to the manganese processing stream, product form, or marketing strategy.

² Manganese-rich slag, a by-product from nodule processing with no direct equivalent product in traded markets, but similar characteristics to manganese ore.

19. For cobalt, copper and nickel, the value of the metals in the form first sold by the processor is likely to be easily determined using transparent and widely available price series, such as the LME. We propose a royalty that allows for an adjustment to the gross value of the metal content of the nodules to account for processing costs. An example of this kind of valuation basis used in land-based mining is the NSR concept. Alternatively, a gross metal content value basis could be used, provided the rate applied is adjusted such that the burden on the collector is equivalent to that using a basis which deducts processing costs, such as NSR.³

20. The reference point for valuation should be the likely point of transfer of ownership of the nodules. We expect this to be the CFR point of unloading of the ship when ownership changes from the collector to the processor. The rationale is that if this is an arm's length transaction, then it is at this point that the transaction price would in theory become transparent.

21. The valuation basis used to determine the royalty burden – whether through the MIT model approach, an NSR calculation or some other method to estimate a fair value of the nodule in the absence of arm's length transaction prices – should take into account the value added by the processor so as to not unduly burden the collector. Therefore such calculations are dependent on an estimation of the processor's costs, which are currently highly uncertain. We recommend that the royalty regime is reviewed within the first few years of operations beginning, which will enable any necessary alterations due to differences between actual processing costs and preliminary estimations.

22. Future metal prices are uncertain and historic price developments and forecasts of future demand are unfortunately poor guides into the future. New periods with high metal prices like the so called "super cycle" of the early 21st century might come again in the future. To make sure that also the Authority and not only the companies involved benefit during such periods we indicate a preference for a progressive system. Above certain pre-defined price levels higher royalty rates kick in and below a certain price level royalties are decreasing but not below a certain floor level in order to guarantee a minimum stable level of income for the Authority.

23. These proposals all fall within the four different regimes that have already been advanced by the Authority. Our approach would result in a combination of three of them in order to obtain a balance between the interests of the Authority, contractors and countries with land-based mining of the four metals.

24. It will be important that the Authority has the right to collect all necessary information (volumes, content of metals and other data) to make continuous evaluation of the effects of the royalty regime and if necessary has an option to revise the royalty regime as the regimes used for land-based mining are developing and changing and also when the technology, beneficiation processes and organisation of deep sea bed mining are emerging and mining actually gets going. Such revisions should not be overly difficult and should not

³ e.g. If the gross metal content value of the nodules in a particular year is 500 USD/t, and the allowance for processing opex and capex is 300 USD/t, then the NSR basis is 200 USD/t. In this example a rate of 5% on an NSR basis would be equivalent to a rate of 2% extracted on gross value.

have to involve the basic structures of the regime chosen today but primarily adjustments of the royalty rates and trigger levels for metal prices.

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