

**Submission to the International Seabed Authority on  
Developing a Regulatory Framework for Mineral Exploitation in the  
Area: Stakeholder Survey**

**May 16, 2014**



**I. About the Deep Ocean Stewardship Initiative**

The mission of DOSI is to integrate science, technology, policy, law and economics to advise on ecosystem-based management of resource use in the deep ocean and strategies to maintain the integrity of deep-ocean ecosystems within and beyond national jurisdiction.

DOSI is a partnership of scientific organizations and individual experts collaborating through seven working groups to address priority deep ocean issues including 1) ecosystem-based management in the deep sea, 2) knowledge gaps and ocean assessments, 3) transparency, compliance and industry engagement, 4) awareness raising and capacity building in developing nations, 5) conservation and sustainable use of marine genetic resources beyond national jurisdiction, 6) communication and networking; and 7) deep sea fisheries management.

Further information about DOSI may be found at: <http://www.indeep-project.org/deep-ocean-stewardship-initiative>

Recent activities by members of DOSI relevant to seabed mining include (attached):

1. Kathryn J. Mengerink, Cindy L. Van Dover, Jeff Ardron, Maria Baker, Elva Escobar-Briones, Kristina Gjerde, J. Anthony Koslow, Eva Ramirez-Llodra, Ana Lara-Lopez, Dale Squires, Tracey Sutton, Andrew K. Sweetman, and Lisa A. Levin. A Call for Deep-Ocean Stewardship. *Science* 16 May 2014: 344 (6185), 696-698.  
[DOI:10.1126/science.1251458]  
<http://www.sciencemag.org/content/344/6185/696.summary>
2. DEEP OCEAN STEWARDSHIP INITIATIVE STATEMENT TO THE INTERNATIONAL SEABED AUTHORITY, submitted Thursday 15 May 2014
3. Meeting Summary: Defining “Significance” in Environmental Impact Assessment for Deep-Sea Mining March 26-28, 2014, Scripps Institution of Oceanography

4. Brief to the International Seabed Authority Legal and Technical Commission requesting support for a multi-disciplinary workshop to develop an environmental management strategy for The Area , 7 June 2013

Contributors to this ISA stakeholder survey include:

- Jeff Ardron, Institute for Advanced Sustainability Studies
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- Malcolm Clark, NIWA, New Zealand
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- Kathryn Mengerink, Environmental Law Institute
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## II. The Survey

In its preliminary work, the ISA has identified the following focus areas in which it seeks your initial input and comment. There is clearly no necessity to respond to all parts and all questions. However, each core area does have overlapping obligations.

- Part A – Financial terms and obligations;
- Part B – Environmental management terms and obligations;
- Part C - Health and safety and maritime security; and
- Part D – General considerations – stakeholder communication and transparency.

There are likely to be other focus areas that emerge during regulatory development.

You are also invited to comment on any issue connected with the development of the regulatory framework under Part D.

### **Part A: Financial terms and obligations**

In responding to this Part A, please consider the questions presented below and in a bullet point form highlight the main issues you believe should be addressed or considered in developing a regulatory framework. Feel free to provide additional information in narrative form.

#### ***The payment mechanism***

The Agreement requires that a system of payments is to be implemented which will compensate mankind for the exploitation of the resources in the Area.

The Agreement calls for there to be a fair system and that the payment system should neither be complicated nor incur major administration costs for either the ISA or a Contractor. The Agreement states that a royalty or combined royalty and profit-share mechanism is to be considered, although alternative system(s) are also possible. [royalty requires no profit—fee for service]

In a land-based environment, it is generally accepted that a progressive system is fairer and that any payments increase in line with project profitability, subject to a minimum revenue flow through a royalty-based mechanism. However, there is an administrative trade-off in that royalties are generally simpler to administer than profit-based mechanisms, which can be technically challenging. Currently, the ISA does not have an accounting infrastructure to support a complex profit-based system.

Other qualities of a financial system include stability, flexibility and responsiveness to changing market conditions.

The ISA Secretariat has undertaken a preliminary study into comparable land-based mechanisms. However, to advance this further your comments on the following would be appreciated.

In connection with a proposed payment mechanism and system:

1. *In delivering a best revenue opportunity for the ISA and an overall fair and equitable system, which payment mechanism would you consider preferable for the ISA and Contractors and why?*
  - a. The system should be as simple and straight-forward as possible. At a maximum, it could be a three step payment mechanism
  - b. An up-front payment of a significant amount --akin to an insurance bond or fee to cover the administrative, transaction and EIA oversight costs
  - c. Royalties, based on revenues derived from when the raw stuff is sold and before processing occurs. For each ton sold (arms-length fair market accounting value) there should be a certain percentage paid as a royalty. Percentage could be based on a number that reflects revenues or a flat number based on dollars per ton.
  - d. Profit sharing, under certain circumstances, based on profits earned could be invoked as a mechanism to capture economic rents/windfall profits
  - e. To be fair need all levels and all formats of benefit sharing
  
2. *If a royalty mechanism is adopted for reasons of administrative convenience, how can a royalty mechanism capture, for example, economic rents over the life of an exploitation contract?*
  - a. A royalty mechanism can capture the economic rents over the life of the contract if the formula used to capture your value can be renegotiated every few years
  - b. Such an “evergreen” contract is standard practice which is used frequently. Key parameters may be renegotiated every few years.

- c. Royalties should be based on revenues and not net revenues (to avoid consideration of costs)
3. *Are you aware of any alternative payment mechanisms that would merit consideration by the ISA?*
    - a. A fee system- a flat rate per license fee that covers at minimum things such as administrative costs, transaction costs and the costs of the ISA being engaged in the EIA process,
    - b. A performance bond to ensure meet their best practice commitments and to cover any potential defaults.
  4. *In your view, how frequently should any payment mechanism be reviewed from a regulatory viewpoint?*
    - a. Initially very often—when starting up will be important to review frequently.
    - b. Also need to review the formula used for a payment mechanism when any major changes in operation procedures occur, based on international best practices
    - c. At least every five years when all is going smoothly
  5. *The point(s) of valuation for any payment obligations under the regulatory framework needs to be identified. In land-based regimes and oil and gas regimes, theory determines that the valuation point is as close as possible to the point of extraction of the resource. In land-based regimes an approximation for this is usually the first arm's length sale in the downstream process. Often a free on board export price or a net back system is adopted for royalty calculation purposes.*

*For activities in the Area, there may be a number of possible valuation points for the minerals and metals to be exploited. Please would you consider and advise which valuation point(s) the ISA should consider in determining an arm's-length value for the purposes of calculating the fair value of the mineral and metal resources. From an administrative viewpoint, which valuation point would be the simplest to determine?*

- a. Valuation point: could apply at each or various points in the supply chain.
  - b. May depend on royalty formula
  - c. Options include:
    - a. When comes onto the barge
    - b. When landed in port a
  - d. Different resources will be processed differently.
  - e. Would need some mechanism for sampling of ore and inspection of paperwork
  - f. For profit sharing regime, may want an inferred profit or notional profit to guard against transfer pricing
6. *In connection with any late or overdue payments / returns by Contractors, in your opinion, what penalty or fine mechanisms should be adopted by the ISA?*
    - a. Interest rates charged on outstanding fees

- b. Fines (need to have proportionality built in, a large amount for major offence, less for minor offences)
- c. License temporarily suspended or rescinded (which triggers arbitration or court proceedings to determine a longterm outcome)
- d. Forfeiture of the performance bond, or a reduction in the amount returned post-extraction also is a good way to deter late (non) payment of royalties

### ***Other considerations impacting financial terms and obligations***

7. *The current Exploration Regulations state that an applicant must be “financially and technically capable” of carrying out a plan of work for exploration. This is considered of relevance to future exploitation regulations as well.*

a. *In your view what key elements should be considered in respect of “technical” capability?*

- i. A strong connection between contractor and subcontractors
- ii. Demonstrated capacity to control myriad contractors and sub-contractors in complex operations
- iii. Experience in developing state-of-the-art equipment and best practice processes and procedures (engineering dept)
- iv. An understanding of basic scientific requirements to produce adequate data that will support robust analyses (in-house scientific / biological expert(s) or contract with such expertise)
- v. Experience in data collection and management to ensure analyses and results can be reviewed where necessary.

b. *Similarly, in your view what key elements should be considered in respect of “financial” capability?*

- i. Confirmation that the funding is in place for this project
- ii. All funders should be signatories to the Equator Principles (Equator-Principles.com)
- iii. Financial solidity such that any potential cost increases can be covered
- iv. Demonstrated ability to complete projects on time and on budget
- v. Demonstrated intention to decommission and restore the site
- vi. Demonstrated intention to implement all environmental requirements during life of the contract and any that may continue afterwards
- vii. Proof of adequate insurance
- viii. Ability to post a bond (per below)

8. *In your view, how can the regulatory framework be structured to encourage optimum extraction of low grade mineral resources?*

- a. This may not be an appropriate approach if seeking to implement the policies and principles of Part XI of UNCLOS: it could hamper the orderly development of the resource and would spread damage to the marine environment beyond the range necessary to secure good value
- b. High grading allows you, to a point, to learn about mining while minimizing environmental footprint and maximizing return. However, it should not be assumed that all sites will be re-worked in the future, if this would hold back the ecological recovery. Hence a balanced approach, not just taking the best, but also not working a claim to the ‘dregs’, may be necessary.

- c. Want to keep other sites pristine for ecological connectivity, and possibly when technology improves can return and may be able to extract more
9. *Do you have any suggestions for incentive mechanisms that would encourage investment in the Area and / or support best environmental operating practices?*
- a. Every operator has to continually share their best practice, so that operators may benefit from each other's knowledge, and thus best practices can be improved across the industry
  - b. Best practice needs to be under continual review in order to incorporate outcomes of such experience-sharing (as in the airline industry response to accident)
  - c. Effective compliance and enforcement mechanisms and appropriate penalties to level the playing field so all Contractors share an equal obligation
  - d. Require use of or compliance with best available technology requirements (e.g., U.S. Clean Water Act utilizes best available technology requirements for discharge permits)
10. *For what term (in years) should an exploitation contract be granted? What do you consider best practice in terms of renewal periods for the same contract?*
- a. If everything goes normally, contract could last fifteen years with five-yearly reviews of key provisions (an "evergreen contract"), and the possibility of renewal
  - b. Performance and environmental reviews would be more frequent in initial phases
  - c. Should need to show strong performance as a condition for renewal
11. *In your view, what criteria should Contractors / the ISA consider in connection with the optimum size of exploitation areas within a contract area?*
- a. Depends on mineral resource and the regional distribution of habitat associated with that resource; polymetallic nodule exploitation areas can be much larger than cobalt crust or massive sulphide exploitation areas.
  - b. Optimizing the location may be more important than optimizing the size due to the need to protect adjacent environments from plume impacts
  - c. The optimal size for exploitation needs to be consistent with the spatial scale of biological communities to ensure ecosystem composition, structure and function is not compromised across the region.
  - d. Special features such as ecologically, scientifically or biologically significant sites as well as components of a representative system of no-mining areas should be identified and set off limits in advance and protected from plume and other cumulative environmental impacts
  - e. Spacing depends on extent and persistence of plume as well as the ecological coherence of the regional ecosystem (see (c) above)
  - f. Location and scale of exploitation area should be limited based on the need to minimize impacts from exploitation area expanding beyond contract area
  - g. Areas should be designed to ensure connectivity across ecosystems—e.g. migratory or larval dispersal corridors.

12. *It would seem appropriate, in line with existing extractive industry regimes, that financial penalties are considered as part of the regulatory framework. The Agreement provides, subject to judicial remedies, that in the case of violations of non-fundamental contract terms (or in place of any suspension or termination of a contract), monetary penalties may be imposed on Contractors. Contractors may also be subject to other penalty regimes beyond that of the ISA (for example, by sponsoring States under the terms of domestic licences or permits).*

- a. *In your view, what penalty mechanisms should be adopted in the regulatory framework and imposed specifically by the ISA? For example this could be fixed penalties in connection with the breach of procedural obligations, including environmental procedural obligations;*
  - a. Should be severe while proportionate relative to the offence: experience shows that without threat of severe penalty key procedures readily go awry
  - b. Offences should be designed with regulatory efficiency in mind
  - c. Should be based on a liability regime based on strict and unlimited liability
  - d. Penalties should be both civil and criminal (including for the management team of the principal Contractor)
  - e. Should have two systems in place: (1) punitive system to punish bad actors for negligent and/or grossly negligent behavior (e.g., see U.S. Clean Water Act requirements related to per barrel fines for illegal oil discharges); (2) liability system to require responsible parties to cover costs of clean up (if relevant/possible), assessment of injury to natural resources, and restoration of sites when illegal impact occurs
  
- b. *In addition, do you have any recommendations as to the classification (seriousness of the violation, duration etc) of violations and a range of penalty amounts?*
  - a. Need to do a comparative study of national regimes
  - b. Risk of financial loss is not always an incentive to abide by the rules
  - c. If dealing with toxic materials, may need an even more stringent regime
  - d. Intentional and/or reckless behavior should incur larger penalties
  - e. Should establish penalties based on strict liability, negligence, gross negligence or wilful misconduct.
  - f. Should consider history of party in penalty schedule
  - g. Penalties should include fines and permit sanctions
  
- c. *Finally, your recommendations on the use of any penalty amounts collected by the ISA? For example, should these amounts be directed toward an inspection regime only?*
  - a. Inspection regime should not be funded from penalty amounts. Inspection regime should be funded from core funding—can't wait until something goes wrong to pay for an inspector.



- b. A coherent regime should cover the cost of inspection from core funds. The incentive should not be to raise penalty funds—a good regime has no penalty income.
- c. Penalty amounts should be distributed amongst the ISA benefit sharing scheme, ISA general funds and ISA Endowment Fund, or a separate new Trust Fund;
- d. Consider using penalties to support research including research into restoration (e.g., RESTORE Act in U.S. targets Clean Water Act fines from the *Deepwater Horizon* to ecosystem and economic recovery of the Gulf of Mexico); and to set aside from emergency response and restoration when responsible parties are insolvent (e.g., U.S. Oil Spill Liability Trust Fund)

13. *The Exploration Regulations require Contractors to maintain appropriate insurance policies that are in accordance with generally accepted maritime practice. Do you have any recommendations as to any specific insurance products that should be reflected in the exploitation regulatory framework?*

- a. Consideration should be given to experiences in offshore petroleum development and extraction
- b. Generally accepted maritime practice is not an acceptable standard as the seabed mining industry is not comparable to shipping as it is inherently more destructive.
- c. Want best practice insurance to cover all liabilities associated with seabed mining
- d. Need policies to cover extreme loss—ensure the tail gets covered through reinsurance
- e. Insurance will need to be sufficient to cover full range of liability under ISA liability regime
- f. Insurance should not be subject to any exclusions such as force majeure, act of god, third party interference or regulatory interference
- g. The insurer should have appropriate reinsurance to cover given the potential magnitude of the costs related to the risks associated with such large and uncertain enterprises.
- h. The policy should contain all the specifics as a complete package including mining operations, business income, liability protection, restoration, etc.
- i. Proof of adequate insurance should be required.

***Specific environmental considerations***

14. *It is common practice in land-based regimes to require an environmental guarantee or bond. In some regimes, a cash amount is paid under a trust arrangement or to a special bank account. What are your recommendations for including such a guarantee or cash contribution in the exploitation regulatory framework? Please advise on the nature of any guarantee, the quantum of the guarantee (its calculation methodology), its use and rationale (for example, for restorative obligations, agreed penalty amounts) and the suggested duration before release / return.*

- a. The regime should be based on bonds. (To be effective it is important that the regulator holds the funds).
- b. Costs associated with unusual / extreme environmental harm (i.e. outside of the business as usual scenario) should be covered by insurance and liability arrangements; normal operational impacts should be covered by the operator.
- c. Bonds should cover costs of decommissioning and clean-up if contractor goes away
- d. Quantum should be sufficient to cover the costs associated with cleanup and meeting contractor obligations in the event of default (100% of rehabilitation costs)
- e. Quantum could also reflect related opportunity costs to the ISA of potentially having had a contract with an alternative contractor at that time
- f. Should include restoration and penalties associated with environmental harm
- g. Duration—after restorative obligations has been discharged to satisfaction of ISA and an independent inspection team.

15. *The Seabed Disputes Chamber<sup>1</sup> recommended that consideration be given to establishing a trust fund in the event an environmental liability gap arises. Western Australia, for example, has implemented a Mining Rehabilitation Fund to cover situations where an operator fails to rehabilitate the environment. However, the concept of a trust fund may have wider appeal.*

*Your comments would be welcome therefore on the setting up of a general environmental trust fund under the exploitation regulatory regime on the basis of the “polluter pays” principle. Please also provide your comments on how any contribution to the fund should be calculated and suggested, specific uses of trust monies.*

- a. Liability regime should be strict and unlimited, allowing for uncertainty and knowledge gaps, so there should not be any liability gaps
- b. A trust fund may still be useful to cover unexpected situations in new and uncertain circumstances

All miners should need to contribute to trust fund at rates sufficient to pay, inter alia, for large scale monitoring, data collection, and analysis, publication and sharing, as well as capacity building .d. Suggest taking a similar approach as the Oil Spill Liability Trust Fund in the U.S. This fund has several sources of funding—many of which are relevant to consider for mining, including per barrel tax on oil (consider a per pound or other tax on minerals extracted), Clean Water Act fines from illegal discharges (consider any punitive penalties that arise in the course of illegal action by the mining companies), interest from the fund principal, cost recoveries from responsible parties. Of particular importance in the U.S. is the per barrel tax, as it provides continuous ongoing support for the fund

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<sup>1</sup> International Tribunal for the Law of the Sea: Case No. 17: *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area* (Request for Advisory Opinion submitted to the Seabed Disputes Chamber).

## **Part B: Environmental management terms and obligations**

*There exist a number of general obligations to protect the marine environment in the Convention. In addition the Exploration Regulations identify specific obligations including application of the precautionary approach and best environmental practices. These fundamental principles will be carried through to the exploitation regulations.*

*Similar to Part A, in responding to this Part B, please consider the questions below connected with environmental assessment and environmental management and in bullet point form highlight the main points for consideration in the development of the regulatory framework for exploitation. Again, please provide additional information in narrative form.*

*16. Please describe any general recommendations that the ISA should consider in developing rules, regulations and procedures on the prevention of damage to the marine environment from activities in the Area;*

- a. As suggested in Technical Study No. 11: Towards the Development of a Regulatory Framework for Polymetallic Nodule Exploration in the Area, the ISA should establish permanent committee to develop, review and monitor the effectiveness and implementation of the exploitation regulations. It should be multi-stakeholder, with industry, environmental NGOs, scientists, economists, lawyers and other independent experts together with State representatives, working through open and transparent proceedings. This permanent committee should have a subcommittee structure representing specific areas of expertise (scientific, economic, legal, etc.) to provide input and recommendations to the entire necessarily diverse committee.
- b. Strategic environmental assessments should be conducted at both a global and regional levels that can assess the full range of potential impacts, including cumulative impacts of other human activities and climate change
- c. Regional environmental management plans should be developed that include networks of interconnected areas off limits to mining designed to protect the full range of biodiversity, ecosystem functions and ecosystem services in each region
- d. The precautionary approach and ecosystem-based management must underlie activities. Best environmental practices and best available technologies should be rigorously applied at each point in time (to incorporate advances) while maintaining continuity in environmental measurements so as to allow rigorous comparisons of environmental status over all relevant time a space scales (e.g., from initial baseline studies to ecosystem recovery studies decades or more later).
- e. Allow for staged development and adaptive management of DSM activities as new information and scientific evidence emerge.: a staged or provisional licensing system should be developed involving a pre-feasibility study and work plans to undertake a detailed feasibility study based upon a pilot mining operation.
- f. Caution should be exercised about the number and size of sites licensed for mining activities. New projects should not be authorized (in the same area or for the same contractors in different areas) until existing ones are completed and the impacts measured or sites rehabilitated and recovery processes well understood.

- g. Develop an enhanced research and monitoring program to better understand deep-sea ecosystems, structures, functions and processes and species response. Better understanding of deep-sea ecosystems should not be limited to areas of potential mining but should include the entire region to contribute to wider understanding of ecosystem processes and functions and to allow decision making about the placement of mining activities in a broad environmental and biogeographic context.
- h. Where possible ensure that survey design and sampling methodologies are standardised and rigorously conducted to enable the results from the work of individual contractors to be combined, and build a stronger regional understanding.
- i. Appoint an independent scientific panel to review research and data both within and outside mining areas
- j. Data should be publically available for other independent peer-review, without a screening process
- k. Develop and implement in situ monitoring technology to provide data on time and space scales (e.g., continuously in real time or near real time) (a) of relevance to mining impact assessment and (b) not obtainable with other (e.g., ship-based) techniques. Reference sites should have regular data uploads (e.g. every two months)
- l. Sponsor innovative research to (a) help overcome obstacles created by limited systematic expertise and poorly described but dominant groups of organisms in mining areas – e.g. incorporate next generation molecular tools as a monitoring tool. (b) identify recovery rates for ecosystem functions and services and (c) assign economic value to functions and services of the ecosystems in unperturbed state and at different stages of recovery.
- m. Implement a best practice EIA regime; Require consideration of alternatives in the EIA as a mechanism to evaluate predicted impacts
- n. Establish actions to be taken should impacts exceed those predicted by the EIA (e.g., halting activity until improved approach is developed) to enable adaptive management in area where uncertainty is high.
- o. The existing EIA/S guideline document is a good higher-level template, but more detail needs to be provided to indicate acceptable content and standards associated with development of an EIA.
- p. Review national and international regimes that might have relevant provisions for hazardous and toxic materials, including radioactive materials, and hazardous activities and process; as well as relevant provisions for offshore petroleum development
- q. Require high standards for ships and floating platforms and ensure ships are flagged to responsible states, which should participate in relevant codes of practice and transparency standards

17. *The Exploration Regulations do not reflect any restorative or rehabilitative obligations in the marine environment. In your view, under an exploitation framework, what general restorative or rehabilitative obligations should be incorporated?*

- a. Environmental restoration will be logistically challenging and of unknown efficacy. The remoteness of the environment, the spatial scales of mining activities, and our very poor understanding of structure, functioning, and rates of deep-sea ecosystems make

restoration activities likely to be ineffective, extraordinarily difficult to evaluate, and likely to cause additional harm to natural ecosystem structure and function. It is recommended that spatial management using networks of protected areas is a much more viable approach to effective management of deep-sea mining impacts,

- b. Research is needed to better understand whether ecosystem restoration is even feasible for any of the deep-sea ecosystems targeted for mining. Until it can be scientifically proven that restoration is effective for a particular aspect of ecosystem structure or function, it should not be considered as an option in the regulations.
- c. Preservation Reference Zones (and Areas of Particular Environmental Interest should be placed so they will not be impacted, and then monitored carefully. If any sign of impact is detected (e.g. rise in turbidity) then the mining activity is suspended until an appropriate PRZ can be identified and protected.

At the end of mining, should be an obligation to “decommission” the site, including:

- d. Need a general decommissioning plan
- e. Regulations should include rearticulation of decommissioning plan in light of realities at time of decommissioning (every five years include upgrade of decommissioning plan)
- f. General obligations should include: removal of all material and equipment, including lost material
- g. Hazardous materials should be stabilized and neutralized
- h. Source of disturbance stopped
- i. Fees might be considered to compensate for any lost functions or services (eg like a carbon tax or deducted from performance bond)

18. *As part of the approval process for exploitation, Environmental Assessments and Environmental Management Plans will be required.<sup>2</sup> What procedural steps should be incorporated into the regulatory framework to evaluate Environmental Assessments and Environmental Management Plans? What independent verification procedures should be adopted by the LTC in reviewing Environmental Assessments and Environmental Management Plans?*

- a. As recommended in Technical Study No. 11, the ISA should consider the development of an internal Mining Inspectorate with the specific responsibilities of maintaining oversight and compliance with all exploration and exploitation license activities, including the review of environmental assessments
- b. Need to perform a comparative review of relevant national and international processes to generate a best practice operational manual
- c. Need to ensure that “best practices” are continuously updated to reflect emerging practice and scientific standards
- d. Need to ensure independent verification that the data and information are coherent, sound and correct and being properly applied
- e. Should be opportunity for public comment and independent review at all stages

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<sup>2</sup> See also *Content of the Environmental Impact Statement in ISA Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals* Technical Study: No. 10 at 17.

- f. Should incorporate mechanism to halt operations or impose sanctions if actual impacts substantially exceed predicted impacts, providing incentive to be as accurate as possible with predicted impacts.

19. *As to any damage to the marine environment following the removal of a substrate (e.g. polymetallic nodules) what do you consider the most appropriate advance response strategies to conservation, restoration and natural remediation of biological diversity and ecosystem functioning? Is remediation best achieved by the development of Areas of Particular Environmental Interest<sup>3</sup> and Preservation Reference Zones<sup>4</sup> envisaged by the Exploration Regulations?*

In considering protection as a form of remediation, could look to the U.S. approach to wetlands mitigation as an example. For restoration, e.g., ratios of restored to impacted sites are, e.g., 2:1. However, since protection doesn't actually fix what is broken, ratios are much, much higher like 10-15:1 for protected area: impacted area. Suggest a similar approach here. In other words the areas of permanent protection should greatly exceed the areas for exploitation. Other advance response strategies should include

- a. Development of networks of representative marine protected areas (e.g., Areas of Particular Environmental Interest adopted in the CCZ Management Plan) based on sound scientific principles of marine protected area design. These must be large enough to protect the full range of ecosystems, ecological processes, and biodiversity found across exploited ecological region. These should be identified for all areas of potential mining interest, ideally prior to the allocation of exploration contracts, and definitely before allocation of contracts for exploitation. These should be permanently closed to deep seabed mining to enable the long term conservation of biodiversity and ecosystem function
- b. Preservation Reference Zones for polymetallic sulphides mining fields. It is important to note that PRZs will not be a useful approach unless mining is restricted to a very small percentage of a claim area. Otherwise it is unlikely that any site within a nodule or crust mining claim area will be unperturbed by mining. Protected areas should include Ecological and Biological Significant Areas (EBSAs) , as well as scientifically and socially significant areas )
- c. Conservation planning needs to happen at the outset, or as early in the licence area process as possible, in order to result in a robust conservation area network. If left too late, then it becomes necessary to shoe-horn APEIs etc around licence areas, which is poor practice.
- d. Plan to protect and monitor unimpacted areas in the region with the same assemblage of species, biodiversity and ecosystems functions, to ensure natural levels of

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<sup>3</sup> See ISA *Environmental Management Plan for the Clarion-Clipperton Zone*, ISBA/17/LTC/7, available at <http://www.isa.org.jm/en/mcode>

<sup>4</sup> Under the exploration regulations, Preservation Reference Zones are areas in which no mining is to occur to ensure representative and stable biota of the seabed.

biodiversity and functionality are maintained. Networks of protected areas can accomplish this is properly designed using sound scientific principles. .

- e. Seamounts and vents and other restricted seafloor habitats may have significant levels of endemism, or unique communities. These may need special protection to ensure their ecosystems are not damaged, and entire topographic features will need to be closed to exploitation.
- f. Plans for cessation of human impacts to allow for natural recovery to occur Research is needed to show if restoration may ever be feasible and effective. It would be necessary to maintain sufficient examples of relevant species (eg worms, corals, sponges) to hand to restore ecosystems of damaged sites (similar to what is done on land in Australia)
- g. Where research shows that restocking is feasible (e.g., possibly for very restricted habitats such as individual hydrothermal vent fields) then it will be necessary to collect and provide samples to maintain a living inventory of all affected species and taxa to ensure there is no biological extinction
- h. Samples should be shared, and delivered to national or internationally maintained collections where specimens are processed and maintained, and all countries have access. Biological data should be contributed to OBIS with open access.
- i. Marine genetic resources derived from deep sea mining activities should not become the property of the contractor but should be delivered to the relevant international body
- j. Deep sea mining should not give rights to the marine genetic resources and reference should be made to developments at the United Nations with respect to the sharing of benefits of marine genetic resources derived from areas beyond national jurisdiction.
- k. Investment in research as a form of restoration, where restoration not possible.
- l. Because of the inability to restore, the focus should be on avoiding and minimizing impacts

20. *In connection with question 19 above, what ecosystem functions are critical to restore and / or what levels of biological diversity should be conserved at regional levels, local scales and over what time periods?*

- a. Ecosystem structure and function in the deep sea are so poorly understood that there is currently no way to know in advance which ecosystem functions are critical. Therefore they all need to be preserved at a regional level so can become fully recovered due to natural processes at all scales. For some types of mining (e.g., manganese nodule and seamount-crust mining), recovery is likely to require millenia and the impacts must be managed with this time scale in mind.
- b. As part of advanced response strategy should plan to ensure that no future pollution is emitted from sites from plumes, disturbance of substrate or equipment
- c. At the regional scale all levels of biodiversity should be preserved; at the mining claim scale (>75,000 km<sup>2</sup> for nodule mining) loss of biodiversity is likely to be observed for decades to millennia
- d. General ecological coherence and ecosystem functions that should be maintained include habitat connectivity, population and gene flow, and self-sustaining provisioning of food and shelter.

21. *The Exploration Regulations (and the Convention) envisage an emergency response (known as “emergency orders”) where an incident has caused, is causing or poses a threat of serious harm to the marine environment. Please describe any recommendations you have in the light of best practices on the measures and procedures that should be adopted in connection with an emergency response.*

- a. Establish a reporting protocol where unusual and emergency events are immediately transmitted to the ISA and Flag State and to any contractors or vessels in the vicinity.
- b. Conduct review of best practice of emergency response regimes (eg oil and gas, nuclear) learning from bad examples as well as good practice
- c. Have an automatic change the chain of command—so one person “an emergency chief” takes over to be in charge of the response
- d. Decisions should not be made on cost benefit analysis but on immediate reduction of risk
- e. Develop regional contingency plans, similar to area contingency plans established in the U.S. for emergency response (e.g., see Environmental Protection Agency’s handbook: [http://www.epa.gov/oem/docs/oil/frp/EPA\\_ACP\\_Handbook.pdf](http://www.epa.gov/oem/docs/oil/frp/EPA_ACP_Handbook.pdf)) for elements of what to include in plan.
- f. Require contractors to develop site-based response plans and vessel response plans (including e.g., impact assessment, reporting system, notification flow chart (internal and external), organization chart with roles and responsibilities, equipment inventories and locations).
- g. Require contractors to demonstrate ability to respond to emergency situations
- h. Establish liability system to require responsible parties to cover costs of emergency response in situations where they are at fault.
- i. Establish trust fund to allow immediate response to emergency in the absence of a responsible party or before liability is established.

22. *A number of international and domestic legal instruments, including the Exploration Regulations, incorporate terms such as “serious harm” or “vulnerable marine ecosystems” in connection with the protection of the marine environment. How do you think these terms should be better defined and interpreted in the exploitation regulatory framework?*

- a. Don’t want to unnecessarily change the meaning of the terms beyond current practice which defines “serious harm” as significant adverse impacts which is relatively clearly defined in the FAO International Guidelines for deep sea fisheries in the high seas However, guidelines for management of fisheries may need to be adapted to other types of non-fished ecosystems (see attached DOSI workshop report on “defining significance in context of marine mining”)
- b. A clear definition of “ecological integrity” needs to be provided, and placed in the context of the particular site and resource of interest.
- c. Vulnerable marine ecosystems: can use the FAO criteria and apply them to the impacts of seabed mining, but experience may show if the definition needs to be adjusted in the context of deep seabed mining



- d. VME indicator species lists by themselves are of limited value. Contractors need to provide data on the density/abundance of such taxa, so that threshold levels of what constitutes a VME can be defined on a site-specific basis.
- e. May need to add a category for “vulnerable marine species / habitats”
- f. The term “ecosystem” should be defined to include relevant areal extent: for example, for seamounts would include the entire area of the seamount as well as the surrounding water column, possibly up to the surface. Ecosystem definitions must also consider the openness and connectivity of marine ecosystem, both vertically (due to processes such as POC flux and nutrient regeneration) and horizontally (due to advection and eddy diffusion processes).

*23. How can the ISA most usefully promote and encourage the use of best practice (including technology advances and scientific research) to better protect the environment during exploitation operations?*

One challenge is that technological advances may have proprietary value and thus will not be shared. These advances, however, can be marketed. The ISA could use revenues it collects to encourage new environmental technological innovation in a way similar to the X-Prize.

Incentives for scientific research might be created by allowing mining companies to offset some kinds of environmental impacts through approved investments in scientific research.

*Other mechanisms include:*

- a. Require environmental certification of Contractors, contractors and subcontractors including individual staff members by a qualified body
- b. Set up an independent environmental oversight committee consisting of environmental scientists, that monitors compliance
- c. Make the Contractors train staff from developing countries
- d. Make the use of best practice mandatory—compliance should be obligatory
- e. Should be provision in all contracts to continually update technology to incorporate best practices, so performance is continuously improved
- f. Should be an ISA training programme, seminars, courses, interactive meetings between deep-sea and land-based regimes to share experiences
- g. Could be a prize for innovative technologies, including those that acquire urgently needed scientific information
- h. Best practice should be a legally defined term, as well as being described in technical terms so that contractors can know what is required to implement it to an acceptable level.
- i. Scientific research standards should be prepared for each resource/general location, to provide guidance to individual contractors. Survey standardisation should be agreed and each contractor then can collect data in a way that enables a regional context to be developed that is built up from the collective efforts.
- j. ISA should establish an independent body –not the LTC-- responsible for environmental issues, including the conduct of periodic reviews of best practices.

- k. Advances on best practices-need ways to constantly improve
- l. With respect to seabed mining within national jurisdiction, it has been found that ensuring increased local competence regarding exploration and exploitation enables greater local understanding of the industrial processes, which again gives local interests greater ability to communicate with the industry in order to secure national interests via encouragement or demand of best practices. Perhaps a similar mechanism could be developed for the Area.

24. *Are there any other fees or levies that the ISA should consider to promote environmental compliance?*

- a. Fees and levies should be imposed to support independent monitoring and research outside the Contractors areas for exploration and exploitation, and to establish a mechanism to synthesise and analyze the data and information from both contracted areas and non-contracted areas to assess impacts and increase understanding
- b. Fees and levies can also be used in order to give incentives for the application of the most environmentally friendly technologies (or best practises) in exploration and exploitation, as well as to secure development in the least critically vulnerable areas
- c. Fees or levies could also go into pot to support a award for technology advances that improve monitoring capability or decrease environmental footprint
- d. The ISA could also consider requiring that mining companies issue environmental (financial) bonds that would hold mining companies liable for agreed upon levels of environmental condition. Failure to meet the environmental conditions prescribed would require full or partial forfeiture of the bond. By basing these bonds on ambient environmental conditions and not the use of best practices, the private sector would have incentives to develop technologies to meet environmental standards in ways that are cost effective and with lower risk of failure.
- e. Important in ensuring that environmental standards are met is careful monitoring, preferably conducted by third parties. If properly monitored, mining companies will have incentives to meet pre-determined environmental impacts.
- f. Sliding scale fees could be imposed for different levels of environmental quality during and after mining. Natural baselines would serve as the reference for which no environmental fees would be assessed with increasing levels of damage (or reduced levels of environmental quality) resulting in increasing fees.
- g. Consider establishing a required contribution fund (fees levied on all contractors) that sponsors research addressing questions that *must* be answered *before* commercial mining is authorized. – ie answers required for setting mining regulations on allowable impact.

25. *For the monitoring of activities in the Area, the Exploration Regulations provide for an inspection regime. Additionally, Sponsoring States may also undertake monitoring of Sponsored Contractor activities in the Area through inspection.*

- a. *In your view what monitoring obligations should be placed on Contractors operating in the Area and included in the exploitation regulatory framework?*
- a.1. Contractors should take advantage of continuous electronic monitoring options (e.g. cams, sensors, etc.)
  - a.2. Contractors should provide all required information to sponsoring States and the ISA in near-real time where possible or shortly after data generation.
  - a.3. Presumption should be that information is public information and not proprietary” so Contractor has burden to show why it should be considered proprietary
  - a.4. Contractors should need to cooperate with inspection missions
  - a.5. Contractors should install fixed platforms connected where feasible to broad band fiber optic infrastructure as well as use mobile sensing platforms, eg autonomous underwater vehicles, remotely operated vehicles and gliders for monitoring plumes etc.
  - a.6. Molecular tools (in combination with morphological systematics) must be incorporated into monitoring regimes - to monitor the dominant but hard to identify groups of small taxa like foraminifera.
- *Please list the key measures and characteristics of what should be considered in establishing a supervision programme to verify compliance of Contractors with the rules, regulations and procedures, particularly compliance with their monitoring obligations above. In your view, how should such an ISA regime be structured and implemented, including the frequency of inspection, by whom and how should an inspection regime be funded?*
- a.7. The internal ISA mining inspectorate should have a structured plan to define regular independent reviews but also the authority to make unannounced visits.
  - a.8. The inspectorate should be provided full access to information and to be able to request changes in practices when appropriate
  - a.9. Frequency of inspections would be different according to the phase of project, with more in the early stages and then regularly as well as at every major change in project
  - a.10. Inspection regime should be funded as part of operating budget of organization—as supported by administrative fees from Contractors and Sponsoring States.
  - a.11. Contractors and Sponsoring States must cooperate with the independent inspection regime
  - a.12. Independence: inspectorate should be fully independent and accountable to the Council, ie a higher body than the LTC
  - a.13. Establish a third party observer program funded by the contractors to monitor operations and compliance as is seen in fisheries management (e.g., IATTC requires observers to monitor dolphin mortality in the Eastern Tropical Pacific purse seine tuna fishery).
  - a.14. Establish electronic observation and reporting systems that automatically upload information to central datasystem monitored by the ISA (see for example,

electronic observation and reporting systems established for fisheries management).

- a.15. Require use of vessel monitoring systems to ensure vessels operating only in contract region.

26. *What specific procedural obligations should be adopted under the precautionary approach best environmental practices and adaptive management? Are there any best practice risk management approaches (for example in an oil and gas or fisheries context) that could usefully be adapted to deep seabed mineral exploitation activities?*

- a. Issues that are more important should be decided at a higher level of authority
- b. Supervisory authority for mining companies should have ability to interact with Contractors on a regular basis
- c. Will need to create a chain of responsibility that includes senior management, the sponsoring State, as well as the States of nationality of the contractors and major subcontractors
- d. Designate impact criteria, which would trigger adaptive management to provide appropriate notice to contractor about what impacts would trigger an adaptive management response.
- e. Ensure a tiered system of assessment and development to ensure proper evaluation and allow for adaption along the way (e.g., U.S. has a 4-step process to lease the seabed for oil and gas development, and each stage requires substantial impact assessment—4 steps include lease plan stage, lease sale stage, exploration stage, development and production stage).
- f. Do not release all areas for exploitation at once, but stage over time to enable adaptation as lessons are learned from previous mining sites.
- g. *A risk assessment framework should be (after Hobday et al. 2011):*
  - comprehensive (identify and analyse all potential hazards);*
  - flexible (applicable to all types of fishery, fishing method, species);*
  - transparent and repeatable (be clear about the methods, data, and assumptions used in the analyses);*
  - understandable (easy for everyone to follow);*
  - cost effective (make use of existing knowledge, information, and data within realistic limits of time and resources);*
  - scientifically defensible (from independent scientific peer review);*
  - useful for management (inform appropriate responses); and,*
  - take a precautionary approach to uncertainty.*
- h. Within risk assessment methods, there can be a difference in the underlying concept of risk. A “likelihood-consequence” approach summarises risk as a product of the expected likelihood and consequence of an event. This approach is often regarded as more suitable for rare and unpredictable events (such as a major oil spill), while the risks arising from activities that are predictable, ongoing, and cumulative (such as fishing and some seabed mining activities) are better suited to an “exposure-effects”

approach. Exposure is the total level of impact from the activity, and the effect is the ecological consequence of the impact. The overall risk is then the sum of all the effects. This approach generally requires greater knowledge of the underlying ecology of the system being impacted.

- i. Risk assessment and risk management are separate processes. Risk needs to be evaluated against objective criteria and thresholds which are independent of management measures. It is important to keep in mind that risk assessment itself should not be precautionary. However, risk management, or treatment, should be.
- j. Adaptive management must have clear decision rules, which define the specific action to be taken when a certain event occurs, or a certain threshold is reached. The “we will see what happens and then worry about it” approach is to be avoided.
- k. The management system should have leeway to try more than one promising approach, so as to gather data on the efficacy of each.

*27. In considering environmental procedures above, what internationally-accepted environmental management standards should be reflected in the exploitation regulatory framework?*

- a. Equator Principles,
- b. EITI

## **Part C: Health, safety and maritime security**

The Exploration Regulations require Contractors to comply with generally accepted international rules and standards relating to safety at sea and any related rules, regulations and procedures adopted by the ISA. Equally, the Exploration Regulations similarly require Contractors to comply with any rules, regulations and procedures relating to employment practices including health and safety matters.

*28. In considering health, safety, labour and maritime security, can you suggest the general and / or specific duties and obligations that should be placed on Contractors under the exploitation regulations? Please also consider any further specific obligations toward other users of the marine environment.*

- a.** Should look at what exists inside IMO and International Labor Organization regarding specific obligations and then consider whether additional obligations are needed for seabed mining.

## **Part D: General considerations – stakeholder communication and transparency**

In connection with environmental decision-making procedures, the ISA will facilitate public participation in accordance with the Convention on Access to Information, Public Participation in

Decision-Making and Access to Justice in Environmental Matters, 1998, and its own rules, regulations and procedures.

This stakeholder survey will naturally identify a broad list of stakeholders with an equally broad variety of interests. However, proper and effective stakeholder engagement demands an investment in time and resources.

The ISA seeks your suggestions and comments on the following:

*29. How can the ISA best develop a communications and consultation strategy which both secures transparency, efficiency and provides for the needs of a broad stakeholder base? It would be helpful to include specific examples of successful communication and consultation approaches.*

- a. Continue doing sensitization seminars at the UN to involve broader UNGA audience
- b. Workshops with a broad range of expertise and civil society representation to focus on specific issues as well as the general development
- c. Ensure the meetings of the Legal and Technical Commission or other body designated to develop seabed mining regulations are open to stakeholders, including civil society, scientists and industry
- d. LTC meeting documents, including working docs, are publically available unless their proprietary nature is demonstrated by the proponent (i.e. reverse onus of proof from current procedures).
- e. Example of successful outreach—report on state of deep sea biodiversity, identify those sites that need protection, engage with private sector.

*30. What forms of engagement best enable you to make contributions and receive appropriate feedback? Please provide comments on any specific initiatives, including digital initiatives, that would be productive together with any observations on the structure and content of the current ISA website ([www.isa.org.jm](http://www.isa.org.jm)).*

- a. Communications should be part of your project plan, not an afterthought
- b. The Survey Monkey webtool works well for surveys
- c. Webinars are another effective modern tool for communicating issues and news
- d. ISA website is useful and informative and easy to navigate—not the most important thing to change
- e. If it is decided that the ISA will store data arising from monitoring and mining, the web site architecture should allow for linking to and from other global databases.

Transparency is now an integral part of extractive industries. Transparency spans from financial transparency in terms of revenue management (promoted by the criteria set by the Extractive Industries Transparency Initiative (EITI)) through to transparency of other information which promotes public awareness, facilitates cross-border co-operation, sharing of best practices and lessons-learned.

31. *What information on activities in the Area do you consider most important to make available publicly? How should this information be shared?*

- a. There should be a presumption that all information should be shared publically unless it is clearly in violation of legal constraints (should not be a subjective standard)
- b. Need to know what contractors are doing. This includes the nature of scientific studies, and what data/samples are being collected.
- c. It is common to have a “2-year rule,” whereby all data must be shared after appropriate opportunity is given for the researchers to publish. However, in the case of gross environmental harms and data collected under emergency situations, this rule should be bypassed, and data should be available immediately.
- d. Data must be available in a format, and at a resolution, that allows for independent peer-review and verification of results, as well as allowing for further research and analysis
- e. There is a broad range of relevant information, including the principles applied for procurement
- f. Should be clearly stated on website when an area for exploitation is under which process: stand by, test mining, actual mining. For extractive review, or restorative phases.

32. *What aspects of the EITI do you think should be reflected in the exploitation regulatory framework?*

- a. Would seem that all aspects should be included unless there is a good reason to exclude them, which does not appear to be the case. Those that are not directly applicable could easily be transposed for the Area
- b. Both the principles and the procedures of the EITI are relevant; however, parts will need to be customised for deep sea mining.
- c. Developing deep sea mining transparency standards (whether under EITI or independently) should be seen as an opportunity to improve the current (land-based mining / forestry, and offshore petroleum) standards based on experiences to date. This would include a review of standards, reporting, and compliance mechanisms. The goal would be to better improve practices, remove perverse incentives, and reducing onerous reporting burdens. The ISA should be an active partner in developing such standards. Contractors should be expected to sign on to such standards before commercial exploitation commences.
- d. When hand out a license, need to reveal the procurement principles
- e. Need for transparent process
- f. Information about the contractors should also be transparent, including their financial information and corporate structure

Your input on this Part D will allow the ISA to suggest a meaningful engagement plan, communication process and information flow and encourages your feedback on the above points.

***Other considerations***

33. *Are there any further comments you wish to make on the issues raised in this survey that you have not commented on elsewhere?*

See attached DOSI statement to the ISA

34. *What other areas or topics relevant to the exploitation regulatory framework do you think would benefit from future surveys and consultation, including processes and procedures?*



## V. The review process

Submissions made in connection with this survey will be taken into account by the ISA in the preparation of a preliminary outline of an exploitation regulatory framework for the recovery of mineral resources in the Area.

The bodies of the ISA are due to convene at their twentieth annual session in July 2014. At that time, the outcomes and findings of this survey will be considered by the LTC. Subsequent to that annual session work will continue on the regulatory framework. The ISA anticipates further consultative processes in due course.

The ISA will also identify appropriate stakeholder interest groupings for future engagement and consultation.

## VI. Making a submission

### *Structure of submission*

It would be extremely helpful if you would kindly structure your submission as follows:

- **An opening paragraph introducing you and / or your organization and your direct and / or indirect interest in activities in the Area;**
- Your comments referenced to the relevant parts and questions;
- Any other general and / or specific comments you wish to make;
- **A list of any supporting documents accompanying your submission, together with website links where applicable;**
- Your express consent (see below) to make your personal details and submission publicly available;
- **Your interest in future contact by the ISA and / or being part of a stakeholder group;**
- Your contact details clearly identified.

### *Closing date*

The closing date for submissions is **Friday, 16<sup>th</sup> May 2014 at 1800hr (EST)**.

### *Submission details*

Submissions should be sent by post or electronically as follows:

Stakeholder Survey (ISBA/Cons/2014/1)  
International Seabed Authority  
14-20 Port Royal Street  
Kingston  
Jamaica

Email: [consultation@isa.org.jm](mailto:consultation@isa.org.jm) (format: PDF or Microsoft Word document).

### ***Online submission publication & confidentiality***

In the interests of transparency and to promote and encourage further discussion, the ISA intends to publish all submissions on a dedicated area of its website at <http://www.isa.org.jm/en/home>. Additionally, the ISA will prepare and publish a summary document and analysis of key findings arising from submissions received.

However, the ISA requires your express consent and approval to make submissions publicly available (i) including your name and organization as appropriate or (ii) to make your comments without disclosing any of your personal details. **Please include such express consent in your submission** where applicable. The default position is that your comments and personal details will be kept confidential without attribution.

### ***Future engagement & privacy***

The ISA will retain your personal contact details securely and in-confidence (except for any disclosure consented to above) with a view to contacting you solely in respect of future surveys, consultations and engagement.

Should you no longer wish the ISA to store your personal details, please advise us by sending a request to remove your contact details to the email address above.

### ***Anonymous submissions***

Please note any submissions made anonymously will be disregarded for the purposes of this stakeholder survey.

**Your contribution to this survey is very much appreciated and the ISA wishes to thank you in advance for your time and efforts in preparing a submission.**

## Other information and useful website links

The ISA publishes a wealth of information on its website. This includes current rules, regulations and procedures, papers and decisions from its annual sessions and workshops together with technical and other studies. You are encouraged to browse this material prior to your submission. In particular the ISA would draw your attention to the following publications for further background:

*ISA Towards the Development of a Regulatory Framework for Polymetallic Nodule Exploitation in the Area* Technical Study: No. 11, available at <http://www.isa.org.jm/files/documents/EN/Pubs/TStudy11.pdf>;

*ISA Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals* Technical Study: No. 10, available at <http://www.isa.org.jm/files/documents/EN/Pubs/TS10/index.html>;

*ISA Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area*, ISBA/19/LTC/8, available at <http://www.isa.org.jm/en/mcode> (text available in six languages: Arabic, Chinese, English, French, Russian and Spanish); and

*ISA Environmental Management Plan for the Clarion-Clipperton Zone*, ISBA/17/LTC/7, available at <http://www.isa.org.jm/en/mcode> (text available in six languages: Arabic, Chinese, English, French, Russian and Spanish).

Please refer to the following hyperlinks for additional content on the ISA's and other relevant websites:

*The Mining Code*: existing regulations and recommendations: <http://www.isa.org.jm/en/mcode>

*Publications*: including the ISA's Technical Study series available for download: <http://www.isa.org.jm/en/documents/publications>

*Annual session documents*: documents connected with the ISA's annual sessions between 1995 and 2013: <http://www.isa.org.jm/en/sessions>

*United Nations Convention on the Law of the Sea of 10 December 1982*: [http://www.un.org/Depts/los/convention\\_agreements/convention\\_overview\\_convention.htm](http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm) (text available in six languages: Arabic, Chinese, English, French, Russian and Spanish).

*Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*: [http://www.un.org/Depts/los/convention\\_agreements/convention\\_overview\\_part\\_xi.htm](http://www.un.org/Depts/los/convention_agreements/convention_overview_part_xi.htm) (text available in six languages: Arabic, Chinese, English, French, Russian and Spanish).

*International Tribunal for the Law of the Sea: Case No. 17: Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)* <http://www.itlos.org/index.php?id=109&L=1%27>



