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Secretariat,
International Seabed Authority
14-20 Port Royal Street
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(submitted via email to consultation@isa.org.jm)

October 14th 2019

RE: Working draft – Exploitation Regulations (ISBA/25/C/WP.1)

Dear Sir/Madam,

It has been acknowledged that deep seabed mining can cause long-lasting harm, including loss of vulnerable species and ecosystems, and the potential for damage to be immediately irreversible. However, there are as of yet no plans for a stepwise approach that would enable the gathering of sufficient information to enable an informed judgment as to the potential effects of deep seabed mining at commercial scale over a 30-year contract period. The seriousness and potential irreversibility of the harm justify a highly precautionary approach to the deep sea's development.

To inform IUCN's comments on the 2019 ISA Draft Exploitation Regulations, we have applied the IUCN Council "Guidelines for Applying the Precautionary Principle to Biodiversity Conservation and Natural Resource Management in May 2007"¹ and Article 4 of the 1988 Convention on the Regulation of Antarctic Mineral Resources (CRAMRA) as CRAMRA was an agreement designed to regulate potential mining in a similarly remote, unknown and fragile environment.² Extracts of the IUCN Guidelines are summarized in Annex 1 and CRAMRA's Article 4 is in Annex 2 below.

The Precautionary Principle, as elaborated in IUCN Council Guidelines, requires more than careful anticipation, avoidance and mitigation of potential harm from human activities that are already underway or proposed for the future. "It requires a forward-looking stance of taking care for the future in the sense of actively preparing, planning and providing for it." It requires "humility and restraint, acknowledging human fallibility in the search for certainty, the limits of science, and the tendency to over-reach in the quest for human security and well-being."

CRAMRA's fundamental principle that "*Decisions about Antarctic mineral resource activities shall be based upon information adequate to enable informed judgments to be made about their possible impacts and no such activities shall take place unless this information is available for decisions relevant to those activities*" ensures a threshold for informed decision-making. CRAMRA's requirements for a scientific committee ensures capacity, transparency and

¹ IUCN Council. 2007. "Guidelines for Applying the Precautionary Principle to Biodiversity Conservation and Natural Resource Management in May 2007; full text is available at: https://cmsdata.iucn.org/downloads/In250507_ppguidelines.pdf

² Kirkham, N, Gjerde, KM, Wilson, AMW (in review) "Deep-sea mining: policy options to preserve the last frontier. lessons from Antarctica's mineral resource convention" (available at:



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impartial review, and its high demand for scientific information help to advance understanding of a little studied and fragile part of the Earth system. Our analysis of the draft regulations shows that the present draft is missing many of the key safeguards and criteria used in other arena to ensure the effective application of the precautionary approach to the protection of the marine environment. Precaution is only mentioned directly in two places in the draft regulations: this is not adequate to operationalize precaution in practice. This could be improved through provisions including:

- An assumption that mining will not proceed unless there is sufficient information to enable informed decisions;
- Requirements for a stepwise approach through significantly more research and testing including as part of a rigorously planned and controlled trial, with careful monitoring and periodic review to provide feedback, allowing amendment of decisions in the light of such feedback and new information;
- Grounds for the Commission and the Council to reject an application to protect areas of international conservation interest and out of concern for cumulative effects including climate change;
- An independent group of scientific experts or a Scientific Committee designated by Council to review the environmental implications of mining at all stages; and
- Appropriate consideration both generally and at the site level of the alternative of not mining the deep sea.

To advance the precautionary approach in practice, IUCN has focused its comments on draft regulations 2, 4, 12, 13 and 15. IUCN also supports the more detailed comments from the Deep Ocean Stewardship Initiative (submitted 13 October 2019); the Deep Sea Conservation Coalition (submitted 1 October); and the Code Project (Fifth Report of 1 June 2019).

Please find below the IUCN detailed comments on the March 2019 draft Exploitation Regulations (ISBA/25/C/WP.1).

We would also like to express that consent for sharing is granted.

Yours sincerely,
On behalf of IUCN

A handwritten signature in blue ink, appearing to read 'Minna Epps', is written over a light blue circular stamp.

Ms. Minna Epps
Director, Global Marine & Polar Programme (GMPP)



IUCN Comments on the 2019 ISA Draft Regulations on exploitation of mineral resources in the Area ISBA/25/C/WP.1 (22 March 2019)

Regulation 2

Fundamental policies and principles

DR2: IUCN General Comments: The fundamental principles and policies should be in separate Regulations: fundamental principles such as the common heritage of mankind, effective protection and precaution should be in a stand-alone provision that guides the application of the Regulations and decision-making processes. As noted in the Code Project submission, the incorporation of UNCLOS Article 150's mining production policies should not be brought to bear on fundamental principles or environmental management decisions such as review of an applicant's environmental plans.

DR2 IUCN specific comments:

In furtherance of and consistent with Part XI of the Convention and the Agreement, these Regulations, and any decision-making thereunder, shall be implemented in conformity with these fundamental principles: ~~the fundamental policies and principles of these Regulations are, inter alia, to:~~

- (a) Recognize that the Area and its Resources are the common heritage of mankind and that rights in the Resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act;
- (b) ~~Give effect to article 150 of the Convention by ensuring that activities in the Area shall be carried out in such a manner as to foster the healthy development of the world economy and the balanced growth of international trade, and to promote international cooperation for the overall development of all countries, especially developing States, and with a view to ensuring:~~
 - (i) ~~The development of the Resources of the Area;~~
 - (ii) ~~Orderly, safe and rational management of the Resources of the Area, including the efficient conduct of activities in the Area and, in accordance with sound principles of conservation, the avoidance of unnecessary waste;~~
 - (iii) ~~The expansion of opportunities for participation in such activities consistent, in particular, with articles 144 and 148 of the Convention;~~
 - (iv) ~~Participation in revenues by the Authority and the transfer of technology to the Enterprise and developing States as provided for in the Convention and the Agreement;~~



- (v) ~~Increased availability of the minerals derived from the Area as needed in conjunction with minerals derived from other sources, to ensure supplies to consumers of such minerals;~~
- (vi) ~~The promotion of just and stable prices remunerative to producers and fair to consumers for minerals derived both from the Area and from other sources, and the promotion of long term equilibrium between supply and demand;~~
- (vii) ~~The enhancement of opportunities for all States Parties, irrespective of their social and economic systems or geographical location, to participate in the development of the resources of the Area and the prevention of monopolization of activities in the Area;~~
- (viii) ~~The protection of developing countries from serious adverse effects on their economies or on their export earnings resulting from a reduction in the price of an affected Mineral or in the volume of exports of that Mineral, to the extent that such reduction is caused by activities in the Area;~~
- (ix) ~~Development of the common heritage for the benefit of mankind as a whole; and~~
- (x) ~~Conditions of access to markets for the imports of minerals produced from the resources of the Area and for imports of commodities produced from such minerals shall not be more favourable than the most favourable applied to imports from other sources.~~
- (c) Ensure that, where exploitation takes place, the Resources of the Area are Exploited in accordance with sound commercial principles, and that Exploitation is carried out in accordance with ~~Good~~ Best Industry Practice;
- (d) Provide for the protection of human life and safety;
- (e) Provide, ~~pursuant to article 145 of the Convention~~, for the effective protection for the Marine Environment from the harmful effects that may arise from Exploitation, pursuant to article 145 of the Convention, ~~in accordance with the Authority's environmental policy, including regional environmental management plans, based on the following principles:~~ [Comment: The necessary measures may require more than just the Authority's "environmental policy" and regional environmental management plans. These are necessary but insufficient to ensure effective protection. The ISA as yet lacks an Environmental Policy, which should be developed to guide implementation; there is also a need for a separate article on REMPs to integrate their requirements into the draft regulations. The development and adoption of a REMP should serve as a precondition to consideration of a plan of work]
 - (ebis) Recommendations and decisions pertaining to mineral exploitation in the Area shall be based upon information adequate to enable informed judgments to be made about their possible impacts and no such activities shall take place unless this information is available for decisions relevant to those activities.
- (i) A fundamental condition for the approval of an application for a plan of work ~~consideration for the development of environmental objectives~~ shall be whether the plan of work is sufficient to ensure the effective protection for the Marine Environment, including biological diversity and ecological integrity;



[Comment: a separate article/process is needed to develop criteria for “effective protection”, “harmful effects” and “serious harm”]

- (ii) Ensure the effective ~~The~~ application of the precautionary approach, as reflected inter alia, in principle 15 of the Rio Declaration on Environment and Development and Article 6 of the UN Fish Stocks Agreement through-out all planning, management and decision-making processes in order to protect and preserve the marine environment.
- (iii) Ensure the effective ~~The~~ application of an ecosystem approach [Comment: the ecosystem approach needs to be further defined and operationalized];
- (iv) Ensure the effective ~~The~~ application of the polluter pays principle ~~through market based instruments, mechanisms and other relevant measures;~~ and
- (v) Provide for effective Access to data and information relating to the protection and preservation of the Marine Environment;
- (vi) Ensure Accountability and transparency in all facets of the ISA operations, including decision-making; and
- (vii) ~~Encouragement of~~ Provide for and facilitate effective public participation;
- (f) ~~Provide for~~ Ensure the prevention, reduction and control of pollution and other hazards to the Marine Environment, including the coastline [Comment: (f) and (fbis) should be moved to follow (i);

(fbis) Ensure the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment. [Comment: as (f) above, proposed f(bis) draws directly from Article 145.
- (g) Incorporate the Best Available Scientific Evidence into all facets of the Authority’s operations including decision-making processes;
- (h) Ensure the effective management and regulation of the Area and its Resources in a way that promotes the enjoyment ~~development~~ of the common heritage for the benefit of mankind as a whole; [Comment: there are benefits beyond just financial benefits that should be considered, for example, ecosystem services, marine genetic resources, marine scientific research, telecommunication services, conservation values, option values]
- (i) ~~Ensure that these Regulations, and any decision making thereunder, are implemented in conformity with these fundamental policies and principles.~~ [Comment: a redrafted version of this sub-paragraph has been inserted into the preamble above.

Regulation 4

Protection measures in respect of coastal States

DR 4 IUCN General Comments: The burden of showing a potential for serious harm in DR 4 appears to rest with the Coastal State. As noted by several States during the Council meeting, this is not an accurate reflection of the precautionary approach. Instead, the burden should be



placed on the Contractor to monitor and to share that data with potentially affected states and to continually demonstrate the absence of a risk for serious harm. This will require the ISA to develop environmental objectives, standards and relevant triggers to enable a timely response to avoid serious harm. As pointed out by the Code Project submission, provision also needs to be made to address harms that do not meet the threshold of “serious harm” but which may none the less affect the marine environment, including through cumulative effects.

To enable a proactive response, the Contractor will need to be required to provide the coastal state with information on and continued input from monitoring of potential cumulative impacts from mining, other activities as well as the climate change impacts of warming temps, deoxygenation, and increasing acidification.

As the avoidance of “serious harm” is also an obligation owed to the international community, a similar provision to DR4 is needed to outline the right of all States and stakeholders to require a response to a potential risk or threat of Serious Harm to the marine environment due to the activities of Contractors. Such a provision is needed in order to reflect the provisions of UNCLOS Article 162.2(w) which requires the Council to: “(w) issue emergency orders, which may include orders for the suspension or adjustment of operations, to prevent serious harm to the marine environment arising out of activities in the Area”. This provision is not limited to just impacts on coastal States.

DR 4 IUCN Specific Comments,

Regulation 4

Protection measures in respect of coastal States

1. Nothing in these Regulations affects the rights of coastal States in accordance with article 142 and other relevant provisions of the Convention.

2. Contractors shall take all measures necessary to ensure that their activities are conducted so as not to cause ~~Harmful Effects~~ ~~Serious Harm~~ to the Marine Environment, including, but not restricted to, pollution or damage to the flora and fauna, under the jurisdiction or sovereignty of coastal States, and that such ~~Serious Harm~~ or pollution arising from ~~activities~~ ~~Incidents~~ in its Contract Area does not spread into areas under the jurisdiction or sovereignty of a coastal State.

2bis. ~~The Contractor shall be required to demonstrate that it has technology, procedures and knowledge necessary to identify and monitor key environmental parameters and ecosystem components so as to detect any adverse effects and demonstrate its ability to respond by modifying operating procedures. The results of such a monitoring program shall be made available in real time to the coastal State and other stakeholders.~~

3. Any coastal State which has grounds for believing that any activity under a Plan of Work in the Area by a Contractor is likely to cause ~~Serious Harm~~ Harmful Effects or a threat of ~~Serious Harm~~ Harmful Effects to its coastline or to the Marine Environment under its jurisdiction or sovereignty may notify the Secretary-General in writing of the grounds upon which such belief is based. The Secretary-General shall immediately



inform the Commission, the Contractor and its sponsoring State or States of such notification. The Contractor and its sponsoring State or States shall be provided with a reasonable opportunity to examine the evidence, if any, and submit their observations thereon to the Secretary-General ~~within a reasonable time.~~

4. If the Commission determines, taking account of the relevant Guidelines, that there are clear grounds for believing that ~~Serious Harmful Effects~~ to the Marine Environment that has [the potential to lead to Serious Harm](#) is likely to occur, it shall recommend that the Council issue an emergency order pursuant to article 165(2)(k) of the Convention.

5. The Contractor shall be strictly liable for environmental harm as well as any response and clean-up costs if the Commission determines that ~~the Serious Harm or threat of Serious Harm to the Marine Environment, which is likely to occur or has occurred., is attributable to the breach by the Contractor of the terms and conditions of its exploitation contract, the Secretary General shall issue a compliance notice pursuant to regulation 103 or direct an inspection of the Contractor's activities pursuant to article 165 (2) (m) and part XI of these Regulations.~~

Regulation 4bis. Protection measures in respect of non-coastal States and other Stakeholders

Comment: Regulation 4bis could be based on Regulation 4, only without paragraph 1.

Section 3 Consideration of applications by the Commission

Regulation 12

General

DR 12 IUCN General Comments:

IUCN would like to highlight two issues here:

1. The principles, policies and objectives should be “applied,” not given regard, with prominence given to the principles to ensure effective protection of the marine environment and to apply the precautionary approach.
2. The phrase “in a manner that contributes to realizing benefits” presumes that all seabed mining will benefit mankind as a whole: this issue needs to be weighed carefully because there are also costs to humankind both directly via potential harm to States and communities affected by mining by pollution and economic competition, but also to humankind as a whole—by way of subsidies, the loss of future option values, loss of biodiversity and loss of ecosystem services. These losses are not compensable through monetary benefits alone.

DR 12 IUCN Specific Comments:

1. The Commission shall examine applications in the order in which they are received by the Secretary-General.



2. The Commission shall consider applications expeditiously and shall submit its reports and recommendations to the Council no later than 120 Days from the date of the completion of the requirements for review of the Environmental Plans, in accordance with regulation 11(1)(a) and subject to regulation 14 (2).

4. The Commission shall, in considering a proposed Plan of Work, apply the Rules of the Authority in a uniform and non-discriminatory manner, and shall ~~apply~~ ~~have regard to~~ ~~the~~ ~~fundamental~~ principles ~~as set forth in Regulation 2~~, and ~~have regard to~~ ~~the~~ policies and objectives relating to activities in the Area as provided for in Part XI and annex III of the Convention, and in the Agreement, and in particular ~~the manner in which~~ whether the proposed Plan of Work ~~is~~ ensures effective protection of the marine environment and contributes to realizing benefits for humankind as a whole.

4. In considering the proposed Plan of Work, the Commission shall take into account:

(a) Any reports from the Secretary-General;

(abis) Any advice or reports from a panel of independent scientific experts/Scientific Committee established by Council to review the sufficiency of the environmental components of the proposed Plan of Work;

(b) Any advice or reports sought by the Commission or the Secretary General from independent competent persons in respect of the application to verify, clarify or substantiate the information provided, methodology used or conclusions drawn by an applicant;

(bbis) Any comments received following revision and publication of Environmental Plans;

(c) The previous operating record of responsibility of the applicant; and

(d) Any further information supplied by the applicant prior to, and during the period of, the Commission's evaluation.

Regulation 13

Assessment of applicants

DR 13 IUCN General Comments:

1. To effectively reflect and operationalize the precautionary approach in 13.3.(b) (assessments of applicant's technical capacity), as provided in CRAMRA Article 4 this provision should include a requirement that the application will not be approved if the applicant cannot
 - i. demonstrate that it possesses the technology, procedures and knowledge necessary to identify and monitor key environmental parameters and ecosystem components so as to detect any adverse effects and
 - ii. demonstrate its ability to respond by modifying operating procedures.
2. In addition, in DR13.4 (d) there should be an explicit requirement as in CRAMRA Article 4 that no application shall be approved or mining take place until it is judged by an



independent expert review process/Scientific Committee that the activity in question would not cause, inter alia:

- (a) significant adverse effects on air and water quality;
 - (b) significant changes in atmospheric, terrestrial or marine environments;
 - (c) significant changes in the distribution, abundance or productivity of populations of species of fauna or flora;
 - (d) further jeopardy to endangered or threatened species or populations of such species; or
 - (e) degradation of, or substantial risk to, areas of special biological, scientific, historic, aesthetic or wilderness significance.
 - (f) significant adverse effects on global or regional climate or weather patterns.
- Such assessments shall take into account potential cumulative effects.

DR 13 IUCN Specific Comments:

Regulation 13

Assessment of applicants

1. The Commission shall determine if the applicant:
 - (a) Is a qualified applicant under regulation 5;
 - (b) Has prepared the application in conformity with these Regulations, the Standards and the applicable Guidelines;
 - (c) Has given the undertakings and assurances specified in regulation 7 (2);
 - (d) Has satisfactorily discharged its obligations to the Authority;
 - (e) Has, or can demonstrate it will have, the financial and technical capability to carry out the Plan of Work and to meet all obligations under an exploitation contract; and
 - (f) Has demonstrated the economic viability of the mining project; and.
2. In considering the financial capability of an applicant, the Commission shall determine in accordance with the Guidelines whether:
 - (a) The Financing Plan is compatible with proposed Exploitation activities; and
 - (b) The applicant will be capable of committing or raising sufficient financial resources to cover the estimated costs of the proposed Exploitation activities as set out in the proposed Plan of Work, and all other associated costs of complying with the terms of any exploitation contract, including:
 - (i) The payment of any applicable fees and other financial payments and charges in accordance with these Regulations;
 - (ii) The estimated costs of implementing the Environmental Management and Monitoring Plan and the Closure Plan;
 - (iii) Sufficient financial resources for the prompt execution and implementation of the Emergency Response and Contingency Plan; and



- (iv) Necessary access to insurance products that are appropriate to the financing of exposure to risk in accordance with Good Industry Practice.
- 3. In considering the technical capability of an applicant, the Commission shall determine in accordance with the Guidelines whether the applicant has or will have:
 - (a) The necessary technical and operational capability to carry out the proposed Plan of Work in accordance with Good Industry Practice using appropriately qualified and adequately supervised personnel;
 - (b) The technology, ~~and~~ procedures, and knowledge necessary to comply with the terms of the Environmental Management and Monitoring Plan, ~~and~~ the Closure Plan and the relevant Regional Environmental Management Plan, including the technical capability to identify and monitor key environmental parameters and ecosystem components so as to detect any adverse effects and to modify management and operating procedures as required to avoid the potential for Serious Harm ~~when appropriate~~;
- (bbis) The adequacy of the baseline data and assessment of potential mining impacts through research including a test mining operation during the exploration phase;
- (c) Established the necessary risk assessment and risk management systems to effectively implement the proposed Plan of Work in accordance with ~~Good~~ Best Industry Practice, Best Available Techniques and Best Environmental Practices and these Regulations, including the technology and procedures to meet health, safety and environmental requirements for the activities proposed in the Plan of Work;
- (d) The capability to respond effectively to Incidents, in accordance with the Emergency Response and Contingency Plan; and
- (e) The capability to utilize and apply Best Available Techniques.
- 4. The Commission shall determine if the proposed Plan of Work:
 - (a) Is technically achievable and economically viable;
 - (b) Reflects the economic life of the project;
 - (c) Provides for the effective protection of human health and safety of individuals engaged in Exploitation activities;
 - (d) Provides for Exploitation activities to be carried out with reasonable regard for other activities in the Marine Environment, including, but not limited to, navigation, the laying of submarine cables and pipelines, fishing and marine scientific research, as referred to in article 87 of the Convention; and
 - (e) Demonstrates that ~~Provides, under~~ the Environmental Plans will secure for the effective protection for the Marine Environment in accordance with the rules, regulations and procedures adopted by the Authority, in particular the fundamental principles ~~policies and procedures~~ under regulation 2.

(ebis) Such determination shall not be made unless it is judged [by an independent expert panel/Scientific Committee established by Council,] that the activity in question would not cause, inter alia:



- (i) significant adverse effects on air and water quality;
- (ii) significant changes in atmospheric, terrestrial or marine environments;
- (iii) significant changes in the distribution, abundance or productivity of populations of species of fauna or flora;
- (iv) further jeopardy to endangered or threatened species or populations of such species; or
- (v) degradation of, or substantial risk to, areas of special biological, scientific, archeological, historic, aesthetic or wilderness significance; or
- (vi) significant adverse effects on global or regional climate or weather patterns.

Such assessments shall take into account potential cumulative effects.

Regulation 15

Commission's recommendation for the approval of a Plan of Work

DR 15 IUCN General Comment: As suggested by Australia during the Council meeting, there needs to be an explicit recognition of the discretion in Commission to not recommend approval of the plan of work if the applicant cannot demonstrate that the plan of work will ensure the effective protection of the marine environment from harmful effects. This is particularly important with respect to sites of international and regional conservation interest and in light of the potential for cumulative effects from other mining activities as well as other impacts, including climate change related effects. Given that the Commission's recommendation for approval of a Plan of Work is essentially binding on Council (i.e., unless 2/3rd of Council rejects the recommendation, including a majority of each chamber), it is crucial that the Commission and Council retain a discretion to approve or disapprove a Plan of work in light of the great uncertainties and concerns, including about the direct and cumulative impacts of mining on the marine environment.

DR 15 IUCN Specific Comments:

Regulation 15

Commission's recommendation for the approval of a Plan of Work

1.If the Commission determines that the applicant meets the criteria set out in regulations 12 (4) and 13, it ~~shall~~ may recommend approval of the Plan of Work to the Council.

2.The Commission shall not recommend approval of a proposed Plan of Work if the applicant cannot demonstrate that the Plan of Work, alone or in combination with other activities or impacts, will ensure effective protection of the marine environment, based on the assessment criteria in Regulation 13 (ebis) taking into consideration the best available scientific information and the precautionary approach; or

(2bis) part or all of the area covered by the proposed Plan of Work is included in:

- (a) A Plan of Work for Exploration approved by the Council for the same Resource category for a different qualified applicant; or



(b) A Plan of Work approved by the Council for Exploration or Exploitation of other Resources if the proposed Plan of Work would be likely to cause undue interference with activities under such approved Plan of Work for other Resources;
or

(c) An area disapproved for Exploitation by the Council pursuant to article 162 (2) (x) of the Convention or is within an Area of Particular Environmental Interest or other area of special biological, scientific, archeological, historic, aesthetic or wilderness significance; or

(d) A Reserved Area or an area designated by the Council to be a Reserved Area, except in the case of eligible applications under these Regulations made in respect of a Reserved Area.

3. The Commission shall not recommend the approval of a proposed Plan of Work if it determines that:

(a) Such approval would permit a State party or entities sponsored by it to monopolize the conduct of activities in the Area with regard to the Resource category in the proposed Plan of Work; or

(b) The total area allocated to a Contractor under any approved Plan of Work would exceed:

(i) 75,000 square kilometres in the case of polymetallic nodules; or

(ii) 2,500 square kilometres in the case of polymetallic sulphides; or

(iii) 1,000 square kilometres in the case of cobalt-rich ferromanganese crusts.

4. If the Commission determines that the applicant does not meet the criteria set out in regulations 12 (4) and 13, the Commission shall so inform the applicant in writing by providing the reasons why any criteria has not been met by the applicant, and provide the applicant with a further opportunity to make representations within 90 Days of the date of notification to the applicant.

5. At its next available meeting, the Commission shall consider any such representations made by the applicant when preparing its reports and recommendations to the Council, provided that the representations have been circulated at least 30 Days in advance of that meeting. The Commission shall then consider the application afresh, in the light of the representations, in accordance with this Section 3.

END



Extracts from IUCN GUIDELINES FOR APPLYING THE PRECAUTIONARY PRINCIPLE TO BIODIVERSITY CONSERVATION AND NATURAL RESOURCE MANAGEMENT, As approved by the 67th meeting of the IUCN Council, 14-16 May 2007 (emphasis added)

“The Precautionary Principle has been widely incorporated, in various forms, in international environmental agreements and declarations and further developed in a number of national laws. An element common to the various formulations of the Precautionary Principle is the recognition that lack of certainty regarding the threat of environmental harm should not be used as an excuse for not taking action to avert that threat (See Box 1).

....

The Principle is based on the recognition that a false prediction that a human activity will not result in significant environmental harm will typically be more harmful to society than a false prediction that it will result in significant environmental harm.

The Principle therefore provides a fundamental policy basis to anticipate, avoid and mitigate threats to the environment.

The role of the precautionary principle in the conservation and sustainable use of biodiversity and living natural resources

The Precautionary Principle is of particular relevance and importance in the context of conservation and sustainable use of biodiversity and living natural resources. Species (as well as populations and sub-species) are genetically unique and irreplaceable — their loss is irreversible. Ecosystems vary across a vast range of parameters, and similar ecosystems (whether wetlands, forests, coastal reserves etc) cannot be presumed to be interchangeable, such that the loss of one can be compensated by protection or restoration of another. Further, conservation and sustainable use must deal with a particularly high degree of persistent and largely irreducible uncertainty and complexity.

....

The Precautionary Principle requires more than careful anticipation, avoidance and mitigation of potential harm from human activities that are already underway or proposed for the future. It requires a forward-looking stance of taking care for the future in the sense of actively preparing, planning and providing for it.

Implementing the Precautionary Principle entails:

(a) humility and restraint, acknowledging human fallibility in the search for certainty, the limits of science, and the tendency to over-reach in the quest for human security and well-being;

Guideline 8: ALLOCATE RESPONSIBILITIES FOR PROVIDING EVIDENCE

Allocate roles and responsibilities for providing information and evidence of potential threat and/or safety according to who is proposing a potentially harmful activity, who benefits from it, and who has access to information and resources



Guideline 12: BE ADAPTIVE

Unless strict prohibitions are required, use an adaptive management approach, including the following core elements:

- monitoring of impacts of management or decisions based on agreed indicators;
- promoting research, to reduce key uncertainties;
- ensuring periodic evaluation of the outcomes of implementation, drawing of lessons and review and adjustment, as necessary, of the measures or decisions adopted;
- establishing an efficient and effective compliance system.

Elaboration: An adaptive approach is particularly useful in the implementation of the Precautionary Principle as it does not necessarily require having a high level of certainty about the impact of management measures before taking action, but involves taking such measures in the face of uncertainty, **as part of a rigorously planned and controlled trial, with careful monitoring and periodic review to provide feedback, allowing amendment of decisions in the light of such feedback and new information.**

Applying the Precautionary Principle may sometimes require strict prohibition of activities. This is particularly pertinent in situations where urgent measures are required to avert imminent potential threats, **where the potential damage is likely to be immediately irreversible (such as the spread of an invasive species), where particularly vulnerable species or ecosystems are concerned, and where other measures are likely to be ineffective.** This situation is often the result of a failure to apply more moderate measures at an earlier stage.

In addition, providing a **regime of liability for purely ecological harm, especially in the form of strict liability**, so as to act as a deterrent, may be an important mechanism to support the implementation of the precautionary principle.



Annex 2:

CRAMRA Article 4 provides that:

1. Decisions about Antarctic mineral resource activities shall be based upon information adequate to enable informed judgments to be made about their possible impacts and no such activities shall take place unless this information is available for decisions relevant to those activities.
2. No Antarctic mineral resource activity shall take place until it is judged, based upon assessment of its possible impacts on the Antarctic environment and on dependent and on associated ecosystems, that the activity in question would not cause:
 - a) significant adverse effects on air and water quality;
 - b) significant changes in atmospheric, terrestrial or marine environments;
 - c) significant changes in the distribution, abundance or productivity of populations of species of fauna or flora;
 - d) further jeopardy to endangered or threatened species or populations of such species; or
 - e) degradation of, or substantial risk to, areas of special biological, scientific, historic, aesthetic or wilderness significance.
3. No Antarctic mineral resource activity shall take place until it is judged, based upon assessment of its possible impacts, that the activity in question would not cause significant adverse effects on global or regional climate or weather patterns.
4. No Antarctic mineral resource activity shall take place until it is judged that:
 1. (a) technology and procedures are available to provide for safe operations and compliance with paragraphs 2 and 3 above;
 2. (b) there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify any adverse effects of such activity and to provide for the modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment or dependent or associated ecosystems; and
 3. (c) there exists the capacity to respond effectively to accidents, particularly those with potential environmental effects.
5. The judgments referred to in paragraphs 2, 3 and 4 above shall take into account the cumulative impacts of possible Antarctic mineral resource activities both by themselves and in combination with other such activities and other uses of Antarctica