

**Legal Opinion on the Application of the Precautionary Principle to  
Deep Seabed Mining in the Pacific Region**



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“We know more about the surface of Mars and Venus than we know about the deep ocean floor, broadly speaking it is a great unknown.”

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At the request of civil society organizations in Pacific Island nations, the U.S. Office of the Environmental Law Alliance Worldwide (ELAW) prepared the following legal opinion discussing the precautionary principle as it applies to deep seabed mining.

The purpose of this legal opinion is to provide clarity on the appropriate level of action that must be taken by Pacific Island nations to meet their obligations to fulfill the precautionary principle as they consider the prospect of deep seabed mining in their territorial waters. Given the considerable risks and uncertainties surrounding the environmental impacts of mining activities in deep sea ecosystems, the correct interpretation of the precautionary principle leads to only one plausible result - a moratorium on deep seabed mining.

I. The Precautionary Principle Is a Key Principle of International Environmental Law.

The precautionary principle is a well-established element of international law that dictates taking a cautious approach in matters pertaining to the environment when there is scientific uncertainty as to the possible negative impacts of a project, activity, or program. As described by the Court of Justice of the European Union, the principle warrants the taking of preventative measures “without having to wait until the reality and seriousness of [the threats] become fully apparent.”<sup>1</sup>

The precautionary principle is widely used in international environmental law and has been applied in areas such as climate change, hazardous waste, biodiversity, fisheries management, and sustainable development.<sup>2</sup> The most commonly cited<sup>3</sup> expression of

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<sup>1</sup> Case T-13/99, Pfizer Animal Health SA/NV v. Council [2002] E.C.R. II-3305, at para. 139 (available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61999A0013:EN:HTML>).

<sup>2</sup> See, e.g., United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 165; Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR) 32 ILM (1993); United Nations Basel Convention on the

the principle is contained in the Rio Declaration:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.<sup>4</sup>

In 1988, a group of preeminent scientists, lawyers, and scholars came together to draft a statement to define the precautionary principle in more detail. Out of this meeting came the Wingspread Consensus Statement on the Precautionary Principle. The Wingspread Statement explains, in part:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.

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The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.<sup>5</sup>

Despite its ubiquity in international environmental conventions and agreements, the precautionary principle is challenging to implement because it has been given many interpretations by courts, parliamentarians, and policy makers. Although the principle seems to be continually evolving, its most characteristic attributes are: 1) it requires authorities to take preventive action when there is a risk of severe and irreversible damage to the environment or to human beings; 2) action is required even in the absence

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Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, 1673 U.N.T.S. 57; United Nations Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

<sup>3</sup> See Daniel Kazhdan, *Precautionary Pulp: Pulp Mills and the Evolving Dispute between International Tribunals over the Reach of the Precautionary Principle*, 38 *Ecol. Law Q.* 527, 532 (2011).

<sup>4</sup> Rio Declaration on Environment and Development, Principle 15, A/CONF.151/26 (Vol. 1) (June 14, 1992) (available at <http://www.un-documents.net/rio-dec.htm>).

<sup>5</sup> Wingspread Consensus Statement on the Precautionary Principle (1988) (available at <http://www.sehn.org/wing.html>).

of certainty about the damage and without having to wait for full scientific proof of the cause-effect relationship; and 3) the burden of proof is shifted to those who contend that the activity has or will have no impact.

The significant risks and uncertainties surrounding deep seabed mining implicate strict application of the precautionary principle. Little is known about seafloor mining technology, its efficacy, safety, and the impacts that may arise from the process. In addition, the deep sea environment is a unique and diverse realm that has not been extensively researched and is not well understood. Both of these uncertainties warrant unprecedented caution and attention before proceeding with full-scale development of deep seabed mining.

II. A Moratorium on Deep Seabed Mining is the Appropriate Level of Action to Take Because the Risks of Harm to the Marine Environment and Marine-Dependent Peoples are Serious and Irreparable.

The level of response that must be taken to fulfill the precautionary principle is variable, depending on the risks and uncertainties that an activity presents. As described by one well-respected scholar:

At the most general level, [the precautionary principle] means that states agree to act carefully and with foresight when taking decisions which concern activities that may have an adverse impact on the environment. A more focused interpretation provides that the principle requires activities and substances which may be harmful to the environment to be regulated, and possibly prohibited, even if no conclusive or overwhelming evidence is available as to the harm or likely harm they may cause to the environment.<sup>6</sup>

This variability is highlighted in a pair of cases from Australia that addressed the role of the precautionary principle in environmental decisionmaking.

In *Telstra Corporation Ltd. v. Hornsby Shire Council*, the New South Wales Land and Environment Court was called on to review a town council's decision refusing an application to erect telecommunication equipment on the roof of a private building in order to improve mobile phone reception in the community.<sup>7</sup> The council justified its decision, in part, on the scientific uncertainty about the impacts of electromagnetic radiation on public health and the environment.

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<sup>6</sup> Philippe Sands, *Principles of International Environmental Law*, 272 (2nd ed., Cambridge Univ. Press 2003)(emphasis added).

<sup>7</sup> *Telstra Corporation Ltd. v. Hornsby Shire Council* [2006] NSWLEC 13 (available at <http://www.austlii.edu.au/au/cases/nsw/NSWLEC/2006/133.html>).

The court undertook a lengthy discussion of the precautionary principle and was careful to note that the principle does not aim to achieve zero risk, but rather promotes a considered approach that takes practical steps to avoid serious or irreversible damage to the environment.<sup>8</sup> The court also explained that the principle does not necessarily prohibit implementation of development plans or projects until full scientific certainty is attained.<sup>9</sup>

In applying the precautionary principle to the facts of the case, the court determined that the development application had been wrongly denied. The court found that the government of Australia had adopted a number of regulatory standards addressing safe levels of electromagnetic radiation exposure, all of which the project met. During the course of developing those standards, the government reviewed all available scientific literature on the matter and included extra margins of safety.<sup>10</sup> For that reason, the court determined that a threat of serious or irreversible environmental damage did not exist and, therefore, the precautionary principle did not justify the town council's decision to prohibit construction of the telecommunication equipment.

The same court came to a different conclusion when it reviewed a regulatory decision that rested on shaky scientific ground. In *Leatch v. Director-General National Parks & Wildlife Service*, a government wildlife authority granted a license to a city council to remove habitat for several endangered species as part of the council's plan to construct a proposed highway bridge project in a wetland area.<sup>11</sup> The court quashed the licensing decision on the ground that there was a "scarcity of knowledge" about one of the endangered species in the project area and criticized the authority for proposing "novel" mitigation measures to compensate for lost habitat that had not been studied for effectiveness.<sup>12</sup>

In rejecting the licensing decision, the court noted that the development plan would destroy the habitat of endangered species for which there was a lack of scientific knowledge concerning population numbers, habitat and impacts. Judge Stein stated:

In my opinion the precautionary principle is a statement of common sense and has already been applied by decision-makers in appropriate circumstances prior to the principle being spelt out. It is directed towards the prevention of serious or irreversible harm to the environment in situations of scientific uncertainty. Its premise is that where uncertainty or ignorance exists concerning the nature or scope of environmental harm (whether this follows from

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<sup>8</sup> *Id.* at paras. 168-169.

<sup>9</sup> *Id.* at para. 179.

<sup>10</sup> *Id.* at paras. 184-186.

<sup>11</sup> *Leatch v. Director-General National Parks & Wildlife Service* [1993] 81 LGERA 270.

<sup>12</sup> *Id.* at 284.

policies, decisions or activities), decision makers should be cautious.<sup>13</sup>

The state of knowledge surrounding the deep sea environment and the impacts of mining in this terrain is similarly scarce. In a news interview conducted earlier this year, one of Australia's lead marine scientists who has closely studied mineral deposits associated with seafloor hydrothermal systems, remarked: "We don't really know enough about the ocean floor to make an informed decision as to whether mining the sea bed in Australia is a good idea."<sup>14</sup>

Reflecting this state of uncertainty and risk, the government of the Northern Territory in Australia recently issued a three-year moratorium on seabed mining in territorial waters off the coast. In its policy statement accompanying the moratorium, the territorial government justified its action by explaining:

Seabed mining is a new and evolving worldwide industry with a minimum number of generally accepted practice standards. The methods applied in seabed mining are rapidly changing. Limited information is available on: (i) the actual or potential impacts on the environment and other resource industries; and (ii) methods for managing the impacts of the extraction of minerals from the seabed.<sup>15</sup>

It is appropriate for Pacific Island nations to similarly ban the practice until it is possible to credibly examine the potential risks and impacts of seafloor mining.

### III. "Learning By Doing" Is Not a Proper Interpretation of the Precautionary Principle.

Advocates of deep seabed mining claim that the precautionary principle can be fulfilled simply by monitoring mining activities as they occur and taking action to remedy impacts to the marine environment when they are observed.<sup>16</sup> This is an incorrect interpretation of the precautionary principle, which seeks to prevent environmental damage before it

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<sup>13</sup> *Id.* at 282 (emphasis added).

<sup>14</sup> Interview by Liz Trevaskis, ABC with Dr. Chris Yeats (CSIRO, Australia) (Mar. 7, 2012) (available at <http://www.abc.net.au/rural/nt/content/201203/s3448026.htm>).

<sup>15</sup> Moratorium on Exploration and Mining in Coastal Waters of the Northern Territory (March 2012), para. 3(b) (available at [http://www.nt.gov.au/d/Minerals\\_Energy/Content/File/Media/Seabed\\_Mining\\_Policy.pdf](http://www.nt.gov.au/d/Minerals_Energy/Content/File/Media/Seabed_Mining_Policy.pdf)).

<sup>16</sup> For example, the draft Regional Legislative and Regulatory Framework for Deep Sea Minerals Exploration and Mining developed by the Secretariat of the Pacific Community declares that destruction of the deep seabed ecosystem is unavoidable but that the damage "can be assessed, monitored, minimised and off-set, by responsible management." See Section 7.8. The drafters of the Framework call this approach "adaptive management."

occurs. Furthermore, this approach places a heavy burden on Pacific Island nations that lack capacity to closely monitor and evaluate mining activities that are occurring in areas that are remote and difficult to reach.

The International Tribunal for the Law of the Sea (ITLOS) rejected a similar “learn by doing” approach in a dispute concerning southern bluefin tuna catch in the Pacific.<sup>17</sup> The dispute arose when Japan unilaterally decided to implement an experimental fishing program “to improve the data concerning abundance . . . and to clarify whether it would be possible to increase the catch without affecting the ability to meet the management objective for recovery.”<sup>18</sup> The experimental program involved taking additional southern bluefin tuna (above allocated catch levels) over short-term periods to test Japan’s theories about fish stock distribution and abundance.<sup>19</sup> The experimental program prompted New Zealand and Australia to file requests with the Tribunal to determine whether Japan had breached its obligations under the United Nations Convention on the Law of the Sea (UNCLOS) by taking tuna over and above its national allocation. New Zealand and Australia sought provisional measures from ITLOS directing Japan to cease unilateral experimental fishing and to act consistently with the precautionary principle pending final settlement of the cases.<sup>20</sup>

Siding with New Zealand and Australia, the Tribunal issued provisional measures directing the parties to, among other things, refrain from conducting any experimental fishing programs unless the experimental catch counted towards their annual national allocations. Although the Tribunal did not expressly refer to the term precautionary principle in its decision, it nevertheless applied it and issued the measures in part because “there is scientific uncertainty regarding measures to be taken to conserve the stock of southern bluefin tuna and . . . there is no agreement among the parties as to whether the conservation measures taken so far have led to the improvement in the stock of southern bluefin tuna[.]”<sup>21</sup> The Tribunal rejected Japan’s request to uphold the experimental program and “learn by doing.” Rather, the Tribunal recognized that prudence and caution were warranted due to the scientific uncertainty of the impacts of excess catch and that a total ban on experimental fishing was the only appropriate measure to avert deterioration of tuna stocks.

Allowing full-scale commercial seabed mining activities to move forward under the expectation that impacts can be monitored and remedied along the way is a direct contradiction of the precautionary principle. It is grossly uncertain whether the deep sea environment can withstand the assault of mechanized mining. Deep seabed mining

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<sup>17</sup> *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan) (Provisional Measures)* (1999) (available at [http://www.itlos.org/fileadmin/itlos/documents/cases/case\\_no\\_3\\_4/Order.27.08.99.E.pdf](http://www.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/Order.27.08.99.E.pdf))

<sup>18</sup> *Id.* at para. 14.

<sup>19</sup> *Id.* at Part C.

<sup>20</sup> *Id.* at paras. 31, 32.

<sup>21</sup> *Id.* at para. 79.

constitutes a large-scale experiment that has the potential to destroy vast undersea areas.<sup>22</sup> The precautionary principle requires Pacific Island nations to adopt a more deliberate and careful strategy for exploiting undersea mineral resources.

IV. The Burden Rests With Deep Sea Mining Proponents to Establish That the Impacts Will Be Negligible or Reversible.

It is impossible to implement a precautionary approach if technologies and practices are routinely assumed to be “innocent until proven guilty” of harmful impacts. This approach allows irreversible harm to occur before preventative action can be taken. For that reason, the precautionary principle shifts the burden of proof to the party seeking to benefit from a technology or practice to prove that a threat does not exist or that it can be mitigated. As explained by the Land and Environment Court of New South Wales:

The rationale for requiring this shift of the burden of proof is to ensure preventative anticipation; to act before scientific certainty of cause and effect is established. It may be too late, or too difficult and costly, to change a course of action once it is proven to be harmful. The preference is to prevent environmental damage, rather than remediate it. The benefit of the doubt is given to environmental protection when there is scientific uncertainty. To avoid environmental harm, it is better to err on the side of caution.<sup>23</sup>

In the context of seabed mining, scientific uncertainties about the deep marine environment, the impacts of seabed mining techniques on the environment and other resource industries, and whether this unique ecosystem can tolerate mining impacts remain significant. In 2007, marine science experts affiliated with the International Seabed Authority reported:

[Estimates of biodiversity in the deep-sea environment] remain extremely controversial because truly vast regions of the deep-sea are very poorly sampled, taxonomic expertise required to identify and describe deep-sea species is dwindling rapidly, and modern molecular techniques

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<sup>22</sup> International Seabed Authority, *Standardization of Environmental Data and Information – Development of Guidelines (Proceedings of the International Seabed Authority’s Workshop held in Kingston, Jamaica)* (2001), Ch. 3, sec. 1.1 (available at <http://www.isa.org.jm/files/documents/EN/Pubs/2001-Standards.pdf>) (“If a substantial portion of the claim areas in the Pacific and Indian Oceans are one day exploited, nodule mining could yield one of the largest areal impacts for a single type of commercial activity on the face of the earth.”).

<sup>23</sup> *Telstra Corporation Ltd. v. Hornsby Shire Council*, *supra* n. 7, at para. 151.



have not been applied to most deep-sea animal groups. Thus, we can only guess at the number of species, or the typical geographic ranges of species in the abyssal North Pacific, the largest ecosystem on the Earth's solid surface.<sup>24</sup>

These experts concluded that it was “virtually impossible to evaluate the threat of nodule mining to biodiversity” and cautioned that “[u]ntil biodiversity levels and species ranges in the Pacific nodule province are much better understood, the impacts of nodule mining (or other large-scale anthropogenic disturbances) on deep-sea biodiversity cannot be predicted.”<sup>25</sup>

Mining companies seeking to profit from deep seabed mining cannot credibly demonstrate at this time that the impacts of their activities are negligible, much less reversible. This is clearly demonstrated in the environmental impact statement (EIS) prepared by proponents of the Solwara 1 Seabed Mining Project, which is currently the only licensed commercial seabed mining project in the world.

An independent review of the EIS, conducted by Professor Richard Steiner, concluded “[m]uch of the EIS is simply too general in nature to determine impacts, and many of the mitigations proposed rely upon Environmental Management Plans and procedures that have yet to be developed by Nautilus, and thus the effectiveness of these cannot be judged at present.”<sup>26</sup> With regard to potential environmental impacts, Professor Steiner declared that it was not possible to understand the full impact of the project because the project proponent failed to conduct a comprehensive evaluation of the marine ecosystem in the proposed mining area and, in some instances, reported only “opportunistic observations.”<sup>27</sup> Professor Steiner also criticized many of the proposed mitigation measures as unproven and unpersuasive.<sup>28</sup>

The responsibility for demonstrating that deep seabed mining poses negligible, or at least reversible, threats to the environment rests with the entities that seek to profit from it. This burden has not been met; therefore, and in light of the precautionary principle, the appropriate response is to prohibit seabed mining activities in territorial waters.

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<sup>24</sup> International Seabed Authority, *Biodiversity, Species Ranges, and Gene Flow in the Abyssal Pacific Nodule Province: Predicting and Managing the Impacts of Deep Seabed Mining* (May 2007), 4 (available at <http://www.isa.org.jm/files/documents/EN/Pubs/TechStudy3.pdf>).

<sup>25</sup> *Id.* at 4-6.

<sup>26</sup> Richard Steiner, *Independent Review of the Environmental Impact Statement for the proposed Nautilus Minerals Solwara 1 Seabed Mining Project, Papua New Guinea*, (January 2009), 2 (available at <http://www.deepseaminingoutofourdepth.org/wp-content/uploads/Steiner-Independent-review-DSM.pdf>).

<sup>27</sup> *Id.* at 11-15.

<sup>28</sup> *Id.* at 16-23.

## CONCLUSION

Enough is known about the deep sea environment to understand that this region may contain previously unknown species and habitats, opportunities for scientific research, and potentially valuable non-mineral resources. There is great uncertainty whether undersea ecosystems, especially vent features that have been created over thousands of years, can withstand the damage and destruction caused by deep seabed mining. In accordance with the precautionary principle, Pacific Island nations should follow the example set by Australia's Northern Territory and institute a moratorium on deep seabed mining. The risks and uncertainties of seabed mining are too great to allow mining activities to proceed with the expectation that the damage can be reversed.