

Conserving the biodiversity of the high seas and deep oceans: Institutional gaps in the international system

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Introduction

The annual Resolution of the United Nations General Assembly on “Oceans and Law of the Sea” is one of the most lengthy and detailed of the many resolutions adopted by the General Assembly each year. The subjects addressed in the Resolution cover a vast range of oceans and law of the sea issues. Many of these issues are addressed annually – in fact, many of the paragraphs of the Resolution build upon the language of resolutions of previous years. However the Resolution on Oceans and Law of the Sea adopted by the General Assembly on 12 December 2002 as Resolution 57/141 addressed an entirely new topic in its paragraph 56. The topic was the conservation and management of marine biodiversity around particular seabed features concentrated on the high seas and deep oceans.

Paragraph 56 of Resolution 57/141 reads:

“The General Assembly:

Encourages relevant international organizations, including FAO, IHO, IMO, the [International Seabed] Authority, UNEP, WMO, the Secretariat of the Convention on Biological Diversity and the United Nations Secretariat (Division for Ocean Affairs and the Law of the Sea), with the assistance of regional and subregional fisheries organizations, to consider urgently ways to integrate and improve on a scientific basis the management of risks to marine biodiversity of seamounts and certain other underwater features within the framework of the Convention.”

The paragraph raises a number of questions. What is meant by “marine biodiversity of seamounts and certain other underwater features”? What are the risks and threats to this biodiversity? What are the “relevant international organizations”, and what role do they play in managing the risks to that biodiversity? What institutional gaps exist? What scope is there for integrating and improving existing management and regulation? And how is it to be done?

This paper seeks to address each of these questions. It identifies the sectoral threats to biodiversity of the high seas and deep oceans. It reviews the range of institutions with a mandate relevant to the management of this biodiversity. It identifies institutional gaps, both in sectoral regulation and in coordinating

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structures. The paper then provides a conceptual and organizational model for enhanced regulation.

1. What is high seas and deep oceans biodiversity?

Before asking what is meant by the phrase “high seas and deep oceans biodiversity” it is first necessary to define each of the terms it contains. The high seas is that area of sea, or, to be precise, the water column, beyond national jurisdiction. The term “deep oceans” refers, in this paper at least, to the seabed beyond national jurisdiction – known as the Area – and adjacent deep sea. And while biodiversity can be defined in a number of ways², it will be used in this paper as defined by the 1992 Convention on Biological Diversity (CBD). The CBD defines biological diversity as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and ecosystems.”³

We have long known that the high seas supports a significant number of species. Numerous fish species, including straddling fish stocks, highly migratory fish stocks, and exclusive high seas fish species; cetaceans; turtles; bird species – all of these are familiar to us. Indeed, some of these species represent the most intensively exploited living resources on earth⁴. However our scientific understanding of this biodiversity, and the linkages between species and processes, is still developing.

In contrast, we have only recently discovered the biodiversity of deep ocean areas. Just a few decades ago the deep seabed areas were regarded as lifeless places due to the extreme conditions of sea water pressure, cold temperatures and complete absence of light. They were erroneously thought as marine deserts with pockets of polymetallic nodules scattered around the ocean floor. In 1977 this idea was fundamentally reversed, with the discovery of previously unknown ecosystems at sites where high-temperature fluids rich in reduced compounds pour out into the water column⁵. These sites include sediment communities and seep communities, including hydrothermal vents, petroleum seeps, and sediment-pure water seeps. These areas are also characterized by their rich

² For a useful summary of the different ways in which the term “biodiversity” can be employed, see (Eds: WWF/IUCN) *The status of natural resources on the high seas*, WWF/IUCN, Gland, Switzerland, at 5.

³ See Article 2.

⁴ (Eds: WWF/IUCN) at 5.

⁵ Glowka, Lyle “Testing the Waters: Establishing the Legal Basis to Conserve and Sustainably Use Hydrothermal Vents and their Biological Diversity” in Thiel, Hjalmar & Koslow, J. Anthony (Eds), *Managing Risks to Biodiversity and the Environment on the High Sea, Including Tools such as Marine Protected Areas –Scientific Requirements and Legal Aspects.*” Proceedings of the Expert Workshop held at the International Academy for Nature Conservation, Isle of Vilm, Germany, 27 February- 4 March 2001, at 195- 204. See also UNEP/CBD/SBSTTA/8/INF/3/Rev.1, at 3.

diversity and high endemism in species of micro-organism, fish, crustacean, polychaetes, echinoderms, coelenterates and mollusks.⁶

We now know that there are a number of different types of ecosystems on the high seas and deep oceans, each of which is associated with particular features. In addition to hydrothermal vents, other such features include seamounts, deep sea trenches, deep sea “coral reefs”, cold seeps and pockmarks, gas hydrates, and submarine canyons⁷. The biodiversity associated with each of these features is rich and has a high rate of endemism.

However only a small portion of the high seas and deep oceans has been the subject of marine scientific research, and scientists have much to learn about the species and ecosystems already discovered in these areas.⁸ Significant further research is required to understand the nature and extent of biodiversity of the high seas and deep oceans, as well as the possible threats to this biodiversity. Therefore at present it is difficult to determine the precise status of high seas and deep oceans biodiversity⁹.

2. What are the threats to and impacts upon high seas and deep ocean biodiversity, and how are these currently regulated?

Despite our lack of knowledge of the nature and extent of high seas and deep oceans biodiversity, it is both necessary and possible to identify a list of likely threats to and impacts upon the biodiversity of the high seas and deep oceans. Necessary, because the precautionary approach, as articulated in Principle 15 of the Rio Declaration, requires that action be taken to prevent serious environmental damage, even in the face of scientific uncertainty.¹⁰ Possible, because there are inevitable parallels which can be drawn between threats to marine biodiversity in areas within national jurisdiction, and threats to marine biodiversity in areas beyond national jurisdiction. Navigation and maritime transportation, mineral extraction, fishing activities, and waste disposal may all

⁶ UNEP/CBD/SBSTAA/8/INF/3/Rev.1, at 3. By way of example of the high rate of endemism, research indicates that over 75 per cent of vent species occur at only one site.

⁷ See Annex UNEP/CBD/ SBSTAA/8/INF/3/Rev.1 at 34-38, and see also (Eds: WWF/IUCN), *The status of natural resources on the high-seas*, WWF/IUCN, Gland, Switzerland.

⁸ See UNEP/CBD/SBSTTA/8/INF/3/Rev.1, at 4.

⁹ Birnie, Patricia & Boyle, Allan, *International Environmental Law & The Environment*. 2nd Edition. Oxford University Press, 2002; at 684. While the IUCN study on the Status of Natural Resources of the High Seas attempts to provide an account of the current status of biodiversity of the high seas and deep oceans, the report acknowledges that it is difficult to provide an accurate and detailed account, given the gaps in scientific knowledge: see de Fountabert, A.C.(2001) Legal and Political Considerations, at 73, in (Eds: WWF/IUCN).

¹⁰ Principle 15 of the Rio Declaration provides that “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.”

pose threats to high seas and deep oceans biodiversity. Emerging threats include the possible exploitation of genetic resources from deep sea ecosystems.

In considering existing regulation of the threat to and impacts upon high seas and deep oceans biodiversity, it is essential to recall that these areas, by definition, are beyond national jurisdiction. Therefore regulatory regimes must be cooperative in nature, and international institutions have a key role to play.¹¹

No one international institution has an express mandate to ensure the conservation and management of the biodiversity of the high seas and deep oceans. Rather, regulation has been done on an activity by activity basis, and falls to a range of institutions. This section examines a number of specific activities and threats to high seas and deep oceans biodiversity, and details how these are regulated, before turning to other institutions with broader mandates which also have regulatory role.

Regional institutions also have an important role to play in the conservation and management of high seas and deep oceans biodiversity. Indeed, the importance of action at the regional level to protect marine biodiversity was emphasized in the Johannesburg Plan of Implementation adopted at the World Summit on Sustainable Development.¹² Unfortunately, a consideration of the role of regional institutions in the conservation and management of high seas and deep oceans biodiversity is beyond the scope of this paper.

A. *Navigation and maritime transportation*

(i) Potential impacts

Pollution has long had a serious impact on the marine environment.¹³ While the greatest impacts have traditionally been in coastal areas, there is little question that marine pollution is contributing to the degradation of marine biodiversity of the high seas. This pollution comes from various sources: shipping and land-based sources are the most prominent;¹⁴ although the high seas are also polluted with substances widely dispersed by air, such as nitrogen, lead, mercury and persistent organic substances.¹⁵

¹¹ An outline of the existing international law framework for conservation and management of high seas and deep oceans biodiversity is contained in de Fountabert, A.C.(2001) Legal and Political Considerations, In: (Eds: WWF/IUCN), *The status of natural resources on the high-seas*, WWF/IUCN, Gland, Switzerland. See also generally Kimball, L. *International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainably* (IUCN) 2001.

¹² Contained in Report of the World Summit on Sustainable Development, A/CONF/199/20*.

¹³ *A Sea of Troubles*, GESAMP, Reports and studies, No. 70, 2001; at 5.

¹⁴ Report of the Work of the United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs at its third meeting, A/57/80, Part B, para. 38 at 17.

¹⁵ *A Sea of Troubles*, at 32.

There are a range of shipping related activities which contribute to the degradation of the marine environment: operational discharges; accidental or intentional pollution; physical damage to habitats, such as coral reefs, and the introduction of alien species.¹⁶ Ships, in the course of ordinary navigation, may release, deliberately or unintentionally, a wide variety of harmful substances to the marine environment or indirectly through the atmosphere. Pollutants include oil, oily mixtures, noxious liquid substances, sewage, garbage, noxious solid substance, anti-fouling paints, foreign aquatic marine organisms,¹⁷ and persistent organic pollutants (POPs).¹⁸

In addition to pollution in the course of ordinary navigation, pollution from cargo loss or spillage is another serious issue. Shipping activity, and particularly the maritime transport of goods, has increased significantly in recent decades, and it is estimated that more than fifty per cent of packaged goods and bulk cargo currently transported by sea can be regarded as dangerous or harmful to the marine environment.¹⁹

One of the most harmful high volume cargos in global shipping is oil. The recent accident of the tanker “*Prestige*” off the coast of Spain, which was carrying 77,000 metric tons of heavy fuel oil,²⁰ provide yet another illustration of the damaging impacts of oils spills on the marine environment, both on the high seas and in coastal areas. The UN General Assembly noted in its most recent annual resolution on oceans and the law of the sea the extremely serious damage of an environmental, social and economic nature brought about oil spills as a result of recent maritime accidents.²¹

Another dangerous cargo transported by sea is radioactive materials. An accident involving a ship carrying such materials could well result in serious and long-lasting damage to marine biodiversity. Further studies need to be carried out to determine the harmful consequences to high seas and deep ocean biodiversity

¹⁶ The General Assembly, in its annual resolution on Oceans and Law of the Sea, reiterated its concern at the adverse impacts on the marine environment from ships, including pollution, as well as physical impacts on coral. A/RES/57/141; Preamble.

¹⁷ Report of the Secretary-General on Oceans and Law of the Sea, (A/58/65) 3 March 2003, para.193 at 58.

¹⁸ Persistent organic pollutants possess toxic properties which resist degradation, are subject to bioaccumulation, and are transported, through air, water and migratory species, across national boundaries and deposited far from their place of release, where they accumulate in both terrestrial and aquatic ecosystems. The capacity for the impact of persistent organic pollutants to bioaccumulate and to be dispersed a great distance from the point of release render these pollutants a real threat to marine biodiversity of the high seas and deep oceans. See Kimball, Lee. *Op. Cit.*, at 10-11; See also Fontaubert, A.Charlotte de.; Downes, David R., & Agardy, Tundi S. *Biodiversity in the seas. Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*. IUCN Environmental Policy and Law paper No. 32. A marine conservation and development report. 1996; at 47.

¹⁹ See Report of the Secretary-General on Oceans and Law of the Sea, (A/57/57) 7 March 2002, para.103 at 22.

²⁰ A/58/65; para. 40 at 16.

²¹ A/RES/57/141; para.48

resulting from accidents involving radioactive materials. So far, existing studies place emphasis on coastal waters.²²

Additionally, there is now a wide consensus that normal shipping operations can be responsible for adverse impacts through the introduction of non-indigenous aquatic organisms into the marine environment. The introduction of such organisms into the marine environment through ships' ballast water has been assessed as one of the greatest threats to the marine environment.²³ Although this presents the greatest problems to coastal environment, the accelerated expansion of sea-borne trade²⁴ and the practice of high seas ballast water exchanges, although designed to prevent damage to coastal environment, might in fact have some effects in high seas ecosystems.

Although there is considerable scientific evidence of degradation of the marine environment by a variety of forms of marine pollution and substances, the picture is far from complete. It is more difficult to determine what the impact of such pollution is on biodiversity of the high seas and deep oceans. Nevertheless, to the extent that there is some presence of such pollution in the high seas and deep oceans, we can assume that this will have some negative impact on biological diversity of these areas.²⁵

(ii) Existing regulation

The fundamental regulatory framework governing marine pollution is provided by Part XII of the Law of the Sea Convention²⁶ (LOSC), which is devoted to the protection and preservation of the marine environment. Part XII identifies six sources of pollution²⁷ and then sets out a comprehensive set of obligations for states to prevent such pollution, including as coastal states, flag states of vessels, and port states. However international institutions also have a significant role in this regulatory framework.

²² "Activities undertaken by the International Atomic Energy Agency (IAEA) in 2002 in the context of radioactive waste management and the oceans." Contribution to the Report of the Secretary-General on Oceans and Law of the Sea at 1-2. In its contribution to the Report, the IAEA has additionally referred to its research to model the dispersal and transport of the radioactive waste in the Arctic Sea.

²³ A/57/57; para.373 at 63.

²⁴ *Ibid*; para. 439 at 72.

²⁵ Extrapolating from studies which indicate that marine life communities in contaminated ecosystems generally have reduced species diversity, see Norse, Elliot (Ed) "*Global Marine Biological Diversity. A strategy for building conservation into decision making*", Island Press, 1993; at122.

²⁶ Article 1(4) of LOSC defines "pollution of the marine environment" as "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities."

²⁷ Namely: (i) pollution from land-based sources (Article 207); (ii) pollution from sea-bed activities subject to national jurisdiction (Article 208); (iii) pollution from activities in the 'Area' (Article 209); (iv) pollution by dumping (Article 210); (v) pollution from vessels (Article 211); (vi) pollution from or through the atmosphere (Article 212).

As marine scientific research has deepened our understanding of the impacts of different substances and activities on the marine environment, the legal framework has developed accordingly, establishing differentiated regimes covering different sources of pollution and substances. Legal regimes concerning dumping and vessel-source pollution have been strengthened, and supplemented by rules on transboundary movements and disposal of hazardous and noxious substances, and specifically their maritime transport; airborne emissions deposited to the marine environment; and nutrients and persistent organic pollutants (POPs).²⁸

Regulation of navigation and maritime transport falls under the mandate of a significant number of arrangements and institutions.

The International Maritime Organization (IMO) is the global institution with a specific mandate in the field of safety of navigation and the prevention of marine pollution from ships. The IMO, which currently has 162 members, has adopted and implements various international conventions relating to the protection of the marine environment from maritime shipping activities. It is the institution in the field of shipping with responsibility for norm-creating and standard-setting. It facilitates cooperation among states and those involved in the private domain relating to shipping activities.

The IMO has a number of main committees: particularly relevant are the Maritime Safety Committee, which is responsible for a number of activities relating to the safety of navigation including the maritime carriage of dangerous goods; and the Marine Environment Protection Committee, which also deals with regulation and recommendations aimed at improving the state of the marine environment as a result from shipping.

The IMO has also concluded civil liability regimes for damage to the marine environment resulting from oil pollution and carriage of hazardous and noxious substances by sea. It is expected that the IMO will conclude in the near future an international convention on the control and management of ships' ballast water and sediments.

In relation to marine pollution caused by accidents, the IMO has taken a series of regulatory steps mainly to enhance the safety of navigation through Chapter V of the Safety of Life at Sea Convention (SOLAS) and the international regulations for preventing collisions and also measures to ship routing. In addition, when incidents do occur, IMO has developed a set of rules to deal with these situations. However, in light of the recent disaster involving the sinking of the oil

²⁸ While the 2001 Stockholm Convention on Persistent Organic Pollutants seeks to regulate such pollutants, and eventually eliminate many of them, the Convention is not yet in force, and the problem persists.

tanker *Prestige*, the IMO may need to start a process to reconsider its measures relating to the phasing out of single-hull tankers.²⁹

In relation to dumping, the international legal regime is found in the Law of the Sea Convention and in the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention). The London Convention's main purpose is to regulate the dumping of wastes at sea and prohibiting the dumping of radioactive waste and other radioactive matter. In 1996 Parties adopted a Protocol based on a precautionary approach, which prohibits the dumping of all substances except for a limited list of substances. This instrument also imposes bans on the export of wastes to non-parties for dumping and incineration. The Protocol will supersede the London Convention upon its entry into force.³⁰ It is noteworthy, that the Protocol defines broadly the concept of dumping, including "any storage of wastes or other matter in the seabed and the subsoil thereof from vessels, aircraft platforms, or other man-made structures at sea."³¹ This addition to the notion of "dumping" is particularly important for the conservation of high seas biodiversity.

In the area of prevention, reduction and control of marine pollution, the International Convention for the Prevention of Pollution from Ships, as amended by its 1978 Protocol (MARPOL 73/78), governs the question of discharges from ships³² in six annexes.³³ To some commentators, MARPOL's implementation has not been free of problems. They point, as one of its shortcomings, to MARPOL's lack of the required institutional machinery to deal with cases of non-compliance.³⁴ An additional shortcoming for the protection of high seas biodiversity is that MARPOL's regulatory framework is primarily design for its implementation in sea areas subject to national jurisdiction. After all, in the high seas, implementation and enforcement of this regime is left to flag States.

The IMO also has arrangements for identifying sea areas where special conservation or protecting measures apply. Under these arrangements, IMO might designate a particular sensitive sea area which may be vulnerable to damage by international shipping activities, as well as other type of environmental stress other than shipping. The protective measures include compulsory pilotage schemes or vessel traffic management systems.³⁵ To this

²⁹ The EU is actively lobbying for an advanced phase out schedule for such tankers – see A/58/65; para. 40 at 16.

³⁰ While the Protocol has not yet entered into force, calls have been made both by the General Assembly (See A/RES/57/141, para. 46) and within the framework of the Plan of Implementation of the World Summit on Sustainable Development (see para. 34(a)), for states to ratify the Protocol so that it can enter into force.

³¹ London Convention, Article 1(4)(1)(3).

³² A/57/57; para. 381, at 64.

³³ Oil (Annex I); noxious liquid substances carried in bulk (Annex II); harmful substances carried by sea in a packaged form (Annex III); sewage (Annex IV); garbage (Annex V); air pollution (Annex VI). Annex IV and VI have not entered into force.

³⁴ Birnie & Boyle, *Op. cit.*; at 367-369.

³⁵ A/58/65, para. 214, at 63.

end, IMO has in place a set of Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, 2001.³⁶ Alternatively, under MARPOL 73/78, “special areas” may be designated to introduce strict discharge controls of oil, noxious liquid substances and garbage.³⁷

In the field of carriage of dangerous goods by sea, the IMO has developed a regulatory framework through SOLAS, Chapter VII and, in a more detailed manner, through the International Maritime Dangerous Goods (IMDG) Code, which applies also to the transport of radioactive material. The 2002 SOLAS amendment provides for the mandatory application of the Code from 1 January 2004.³⁸

The International Atomic Energy Agency (IAEA) has a key role in relation to the transport of radioactive material. As part of its mandate to establish standards of safety for handling of radioactive substances for protection of health,³⁹ the IAEA collects and collates information on the inputs of radioactive material into the world’s oceans. In the field of maritime transportation of radioactive material, the IAEA has established transport regulations, and its General Conference has urged States to ensure that their documentation relating to transport of radioactive material meets these regulations. The IAEA General Conference has devised some recommendatory steps in the case of potential accidents at sea.⁴⁰ The General Conference has also called for the elaboration of an effective liability mechanism to ensure compensation for damage, including environmental harm, due to an accident or incident during the maritime transport of these materials. The Johannesburg Plan of Implementation⁴¹ and most recently General Assembly resolution on oceans and law of the sea⁴² contain similar calls and reference to the work of the IAEA General Conference.

The IMO and the IAEA have sought to work together, and it seems that this cooperation is working. For example, the IMO has taken steps to incorporate the IAEA’s transport regulations into the IMDG Code.

Another relevant institution is the International Hydrographic Organization (IHO), which has a mandate to work to improve the safety of navigation through enhanced quality of nautical charts. Much of its work is focused on coordinating the activities of national hydrographic offices and building the capacity of developing countries to produce accurate charts.⁴³ Adequate nautical charting,

³⁶ IMO Assembly resolution A.927(22)

³⁷ A/58/65, para. 212. at 62-63.

³⁸ *Ibid* paras. 51-52 at 19.

³⁹ See “Activities undertaken by the International Atomic Energy Agency (IAEA) in 2002 in the context of radioactive waste management and the oceans.” Contribution to the Report of the Secretary-General on Oceans and Law of the Sea.

⁴⁰ A/58/65; para. 55 at 20.

⁴¹ Johannesburg Plan of Implementation of the World Summit on Sustainable Development; para. 35.

⁴² A/RES/57/141, Preamble.

⁴³ Nandan; *op. cit.*; at 37. See also A/58/65; para. 84 at 28.

by enhancing the safety and navigation, contributes to the protection of marine biodiversity through the reduction of ship groundings, strikes and maritime accidents. It also improves identification and monitoring⁴⁴ for scientific assessments of the marine environment.⁴⁵

Another part of the institutional framework relevant to maritime transport is the Secretariat of the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Basel Convention regulates the transboundary movements of hazardous wastes in order to protect human health and the environment from dangers of such wastes. Parties are required to take measures to ensure that the generation of hazardous waste is reduced to a minimum, to prevent pollution due to such waste, and to prohibit the import or export of waste if they have reason to believe that they will not be managed in an environmentally sound manner.⁴⁶ The Convention Secretariat has among its functions the need to “ensure the necessary coordination with relevant international bodies”⁴⁷ and “to cooperate with parties and with relevant and competent international organizations and agencies in the provision of experts and equipment for the purpose of rapid assistance to States in the event of an emergency situation”.⁴⁸ The Basel Convention Secretariat is pursuing this cooperation in a number of ways. One example is its work with a number of international bodies, such as IMO, Division of Ocean Affairs and the Law of the Sea (DOALOS), United Nations Environment Programme (UNEP), and International Labour Organisation (ILO), on the environmentally sound management of the full and partial dismantling of ships⁴⁹. Another example is its collaboration with the Interim Secretariat of the 2001 Stockholm Convention on Persistent Organic Pollutants⁵⁰ on management issues of persistent organic pollutants waste, including by developing technical guidelines and capacity-building initiatives.⁵¹

Many states continue to face difficulties in effectively monitoring and controlling the transboundary movement of hazardous waste, and therefore in implementing the Convention.⁵² The Conference of Parties has sought to overcome these difficulties by establishing a committee of experts to examine reports of parties on compliance,⁵³ and by adopting guidelines on emergency assistance,

⁴⁴ A/58/65; para. 68 at 24.

⁴⁵ A/RES/57/141; at 30. See also Report of the Fourth Meeting of UNICPOLOS (forthcoming).

⁴⁶ There have been a number of important amendments since the adoption of the Convention. In 1995, it was amended to prohibit transboundary movements from OECD to non-OECD countries. In 1999, the Parties adopted a Protocol on Liability and Compensation. See Protocol.

⁴⁷ Article 16 (1) (d).

⁴⁸ Article 16 (1) (j).

⁴⁹ A/58/65; paras. 169- 170; at 52.

⁵⁰ Article 20(2)(c) of the Stockholm Convention requires that the Secretariat take steps to ensure the necessary coordination with the Secretariats of other relevant international bodies.

⁵¹ UNEP/POPS/INC.6/8.

⁵² The Convention scheme has been criticized for legitimizing trade in wastes. Illegal trafficking also persists. See Birnie & Boyle, *op. cit.*; at 436-438.

⁵³ A/58/65; para. 167 at 51; and Decision VI/12.

compensation, capacity-building, transfer of technology and the development of measures to prevent accidents and damage to the environment caused by the transboundary movement of wastes and their disposal.⁵⁴

Although each of the institutions surveyed – IMO, IAEA, IHO, and the Basel Convention Secretariat – have a role in regulating navigation and maritime transport, none of these institutions have a primary focus on the high seas. This is understandable to some extent, as maritime pollution attracts the greatest concern when the impact is on coastal areas. Maritime pollution on the high seas is less visible. Nevertheless, the impact on the biodiversity of the high seas and deep ocean may well be significant.

To the extent that the work of these institutions reduces the prevalence of marine pollution from vessels, whether in the course of navigation or as a result of maritime accidents, these institutions are contributing to the conservation and management of the biodiversity of the high seas and deep oceans. However there is doubtless scope for these institutions to take a more active role in ensuring regulation of navigation and maritime transport contributed to the overall conservation and management of biodiversity of the high seas and deep oceans. The respective mandates of the different bodies do not seem to preclude them from such a role.

B. Mineral and energy extraction

(i) Potential impacts

The driving force for negotiation and conclusion of Part XI of the Law of the Sea Convention was the expectation that the widespread extraction of minerals from the seabed beneath the high seas – the Area, as it is described in the Convention – was imminent. As we now know, this expectation was somewhat optimistic. A combination of factors – the remoteness of the resources, the technological obstacles to extraction, and fact that such extraction has not been economically viable to date – has meant that widespread mineral extraction from the deep seabed in areas beyond national jurisdiction has not yet become a reality.

Nevertheless, some prospecting in the Area for these resources is taking place, and the possibility remains that mineral extraction on a significant scale could occur in the not too distant future.⁵⁵ However such extraction is more likely to involve the so-called “new resources” – cobalt rich crusts found on the abyssal plains, and polymetallic massive sulphide deposits found around hydrothermal

⁵⁴ A/58/65 para. 168; at 52; and Decision VI/11

⁵⁵ See Report of the Secretary-General of the International Seabed Authority under article 166, paragraph 4, of the United Nations Convention on the Law of the Sea (Eighth Session, 2002), ISBA/8/A/5. All ISA documents are available at <http://www.isa.org.jm/en/default.htm>.

vents - than the resources which were the focus of negotiations of Part XII of the Law of the Sea Convention – manganese nodules and heavy metal deposits.⁵⁶

The potential impact of prospecting for and extraction of these new resources is considerable.⁵⁷ As deposits of ferro-manganese chlorides are to be found surrounding hydro-thermal vents, prospecting and extraction activities could have significant impact on the high concentrations of biodiversity associated with such vents. Prospecting and extraction of cobalt rich crusts on the abyssal plains could also have a significant impact on the considerable biodiversity to be found in these areas.

In addition to activities in the Area, it is also necessary to consider the possible impacts of mineral and energy extraction in zones of national jurisdiction on the biodiversity of the high seas and deep oceans. These activities are invariably accompanied by some marine pollution, such as oil spillage, dust plumes, and tailings.⁵⁸ The impacts of such pollution is likely be greatest where such activities are located close to the outer limits of national jurisdiction. Ocean features, particularly the movement of currents, will also have an impact on the carriage of pollution from sites of mineral extraction to the high seas.

(ii) Existing regulation

The International Seabed Authority (ISA) has responsibility for overseeing mineral extraction activities on the deep seabed beyond national jurisdiction - the Area.

The ISA adopted Regulations for Prospecting and Exploration for Polymetallic Nodules in the Area⁵⁹ in July 2000. The Regulations seek to ensure protection of the marine environment from the harmful affects which may arise from activities in the Area by requiring the application of a precautionary approach, the use of environmental impact assessment and monitoring, and the setting aside of impact monitoring zones to assist such monitoring. The Regulations also empower the Secretary-General of the ISA and the Council to take emergency measures when it appears that activities in the Area may cause serious harm to the environment.⁶⁰ Although significant extraction of manganese nodules is yet to occur, there are seven contractors with permission to prospect for these

⁵⁶ For a useful discussion of the potential of these new resources, see generally “Summary presentations on polymetallic massive sulphide deposits and cobalt-rich ferromanganese crusts”, ISBA/8/A/1.

⁵⁷ See ISBA/8/A/1, para 19.

⁵⁸ See GESAMP Report no. 70, *A Sea of Troubles* (15 January 2001), at 20.

⁵⁹ The regulations are contained in an annex to ISBA/6/A/18..

⁶⁰ Environmental obligations are also written into the contractual arrangements between the ISA and those engaged in mineral extraction (the contractor). The standard contract requires the contractor to “take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible using the best technology available to it”. The model contract is contained in an annex to ISBA/6/A/18.

resources, and a number are doing so. These activities are bound by the Regulations.

The ISA has also started to focus on the regulation of prospecting for and extraction of the “new resources”. ISA Member States have recently commenced discussions on the elaboration of regulations for prospecting and exploration for polymetallic massive sulphides and cobalt rich ferromanganese crusts in the Area, which would take into account the very different features of these resources.⁶¹ The elaboration of such regulations will take some time, and will need to include detailed provisions on how to ensure prospecting and extraction is done in a manner which minimises the impact of those activities on the marine environment, including the high concentrations of marine biodiversity of the deep seabed and deep oceans associated with such resources.

The ISA is the institution with the most direct focus on the high seas and deep oceans. It is the only oceans institution with a field of competence exclusively focused on areas beyond national jurisdiction. It is also in a relatively strong regulatory position: the only way in which an actor can undertake mining activity in the Area is by first obtaining ISA authorization. In many ways, the ISA is ahead of the game: it has erected the regulatory framework before activity has commenced in earnest; it is aware of the need to conserve and manage deep ocean biodiversity; and it is actively considering the problem.

However the focus of the ISA is limited to mineral extraction. It does not oversee all aspects of the seabed beyond national jurisdiction – it does not have a direct role in bio-prospecting, for example.⁶² Nevertheless, it is well positioned to play a role in the conservation and management of high seas and deep oceans biodiversity.⁶³

C. Fishing activity

The high seas has been subject to intense fishing activity for decades. With seventy-five percent of the world’s fisheries fully exploited or over exploited, this pressure is likely to increase, with fishers continuing to seeking new areas and new species to exploit, and increasing fishing effort.⁶⁴

There are two main categories of fish stocks which fishers target on the high seas. The first category is that of straddling stocks and highly migratory fish stocks – those species that lie across, or move between, areas within national

⁶¹ See “Considerations relating to the regulation of prospecting and exploration for hydrothermal polymetallic sulphide and cobalt-rich ferromanganese crusts in the Area”, ISBA/7/C.2.

⁶² See ISBA/8/A.1, para 50-54.

⁶³ See Statement by the Secretary-General of the International Seabed Authority to the Fourth Meeting of the Informal Consultative Process on Oceans and Law of the Sea, 5 June 2003.

⁶⁴ The State of World Fisheries and Aquaculture 2002, FAO, at 23.

jurisdiction and areas beyond national jurisdiction. These stocks include a range of tuna and albacore species.

The second category of fish stocks which fishers target on the high seas is exclusively high seas stocks – those that are oceanic in nature, such as orange roughy or oreo.⁶⁵ These stocks have traditionally been viewed as more difficult to exploit; however, with the decline of other fisheries, exclusively high seas stocks have increasingly become the focus of attention as new fisheries are sought. In a number of cases, exclusively high seas stocks are found in high concentrations around sea-mounts.

(i) Potential impacts

The impact of high seas fishing activities on the biodiversity of high seas and deep oceans is a function of both the intensity of fishing effort and the techniques used in that effort.

Trends in fishing effort on the high seas are difficult to assess definitively – however FAO estimates that the take of ocean species – those fish species that occur largely on the high seas – has trebled in the last 25 years.⁶⁶ Fishing effort has expanded exponentially, and the evidence of over-fishing on the high seas is increasing. A recent study estimates that the world’s fisheries have declined to approximately 10% of the levels prior to exploitation, and that “in open ocean [fish] communities, [there have been] surprisingly consistent and rapid declines [in biomass]”.⁶⁷

Fishing impacts not only on the target species, but also on non-target species, resulting in by-catch. A critical factor in determining the nature and extent of by-catch from fishing effort is the fishing techniques and gear used. A moratorium on one high seas fishing technique – the use of large driftnets – has been imposed due to the high levels of by-catch resulting from its indiscriminate

⁶⁵ “A quick look at the FAO database indicates that close to 400 species can be considered purely or significantly oceanic, [including] 230 species of fish. The biological information available on these species and their present potential and status is generally poor ... and their management and consideration is a matter of serious concern.” Garcia and Majowski, “State of High Seas Resources”, 1990 *L. Sea Inst Proce.* 175 (1992), as cited in Burke, William T. *The New International Law of Fisheries*, Clarendon Press, 1994, at 83.

⁶⁶The FAO report “The State of World Fisheries and Aquaculture 2002” notes “Analyses of the FAO catch database of 116 oceanic species items (epipelagic and deep water species that occur principally on the high seas) reveal that catches of oceanic species almost tripled from 3 million tonnes in 1976 to 8.5 million tonnes in 2000. As some of these species, particularly the oceanic tunas, are also caught within EEZs, this increase may well be more rapid than that of high seas catches per se. The marked increase in catches of oceanic species is also reflected in the world trade in oceanic species. Import and export quantities in product weight rose from 0.5 million tonnes to almost 2.5 million tonnes over the 1976-2000 period”.

⁶⁷ Myers, R.A., Worm, B. “Rapid worldwide depletion of predatory fish communities”, *Nature* (vol. 423), 15 May 2003, 280.

harvest.⁶⁸ However other techniques used in high seas fishing, such as purse-seining, long-lines, and trawling, also have major impacts on non-target species – not only other species of fish, but also marine mammals, birds, and benthic communities. In short, intensive fishing activity on the high seas can impact upon not only the target stocks, but entire ecosystems.

A relatively recent trend is the focus of high seas fishers on deep water fish stocks around sea mounts and in other deep water areas. FAO notes that there has been:

“a rapid increase in fishing pressure on some of the deep water resources that are being exploited in seamounts and other deep water areas at high latitudes in the Indian Ocean, the South Atlantic and the South Pacific, particularly orange roughy, alfonsinos and dorries. Most of these stocks are slow-growing, long-living animals, and thus are highly vulnerable to depletion when the distribution, abundance and dynamics of their stocks are largely unknown.”⁶⁹

Much of this activity is focused on so-called “hot spots” – parts of the high seas where there are high concentrations of target species, usually due to underwater features, such as seamounts. A common fishing technique is to trawl the sea floor on and around these sea-mounts. This technique does considerable damage to non-target biodiversity, severely disturbing benthic communities, and threatening their long term sustainability.⁷⁰ It has been compared to “forest clear-cutting”⁷¹ because of its environmental impact. IUCN has stated that damage to benthic communities on sea mounts as a result of trawling is “undoubtedly

⁶⁸ The Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, done at Wellington on November 24, 1989 (the “Wellington Convention”), and Protocol I, done at Noumea on October 20, 1990, to the Wellington Convention, imposed a ban on drift-net fishing in the South Pacific; subsequent General Assembly resolutions called for global moratorium on the practice (G.A. Res 46/215,); a moratorium which has been largely observed. See Secretary-General’s Report on Large-scale pelagic drift-net fishing, unauthorized fishing in zones of national jurisdiction and on the high seas, fisheries by-catch and discards, and other developments, A/57/459.

⁶⁹ The State of World Fisheries and Aquaculture 2002, FAO. See also GESAMP Report no. 70, A Sea of Troubles (15 January 2001), at 15.

⁷⁰ See Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), para 192; Report of the Executive Secretary of the CBD Secretariat, “Marine and Coastal Biodiversity: Review, Further Elaboration and Refinement of the Programme of Work - Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed (decision II/10 of the Conference of the Parties to the Convention on Biological Diversity)”, UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 36 (22 February 2003). See also Smith, P. *Managing Biodiversity: Invertebrate bycatch in Seamount fisheries in the New Zealand Exclusive Economic Zone*, National Institute for Water and Atmospheric Research, New Zealand (2001).

⁷¹ Watling, L., Norse, E.A. Disturbance of the seabed by mobile fishing gear: a comparison with forest clear-cutting. *Conservation Biology*, Dec. 1998.

widespread”,⁷² and that trawling is also likely to have had an impact on areas of deepwater coral.⁷³

(ii) Existing regulation

Regulation of fishing activity on the high seas falls under the mandate of a significant number of arrangements and institutions.

Regional fisheries management arrangements, covering waters both within and beyond national jurisdiction, have been established to conserve and manage specific straddling and highly migratory fish stocks in many parts of the world. These arrangements usually create an institution to implement the regulatory regime, a regional fishery management organization (RFMO). The UN Fish Stocks Agreement (UNFSA), which entered into force in December 2002, creates a legal framework for the establishment of such RFMOs to conserve and manage straddling stocks and highly migratory fish stocks. While the record of many of these RFMOs in ensuring conservation and sustainable management of target and non-target species is not exactly strong⁷⁴, at least the institutional structures for dealing with conservation and management of straddling stocks, highly migratory stocks, and associated species and ecosystems exist in many cases.

In the case of exclusively high seas stocks, there are few institutional arrangements in place. This is in part due to the fact that international legal framework relating to such stocks is more general in nature than for straddling and highly migratory fish stocks, as no detailed legal framework equivalent to UNFSA has been developed for exclusively high seas stocks. Consequently, the general obligations contained in the Law of the Sea Convention to conserve and manage marine living resources of the high seas⁷⁵ represent the extent of the legal framework. Nevertheless, there is clearly a need for institutional arrangements to conserve and manage exclusively high seas stocks in order to meet even these general obligations. Some early efforts have been made – for example, the recent discovery of rich orange roughy and demersal grounds on the deep water ridges of the South West Indian Ocean has led Australia, South Africa and New Zealand to collaborate on a mechanism to try to effectively manage these species.⁷⁶ However this is the exception - as the FAO states “there is a severe risk that, in the absence of effective fishery management

⁷² WWF/IUCN (2001) *The status of natural resources on the high seas*, WWF/IUCN, Gland, Switzerland, at 25.

⁷³ *Ibid*, at 36.

⁷⁴ See Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), para 128.

⁷⁵ Articles 116 – 119 of the Law of the Sea Convention.

⁷⁶ See Regional Fisheries Issues Affecting Australia, <http://www.affa.gov.au/content>.

regimes, these [high seas deep water] stocks could easily be depleted long before much is known about their populations”⁷⁷.

In addition to specific fisheries management organizations, it is necessary to consider the one global institution with a mandate which includes high seas fisheries - the UN Food and Agriculture Organisation (FAO). FAO has a global focus on fisheries issues⁷⁸, and describes its objective as “to facilitate and secure the long-term sustainable development and utilization of the world’s fisheries and aquaculture”. FAO works towards this end in a variety of ways, including through regular assessment of the state of the world’s fisheries, the provision of technical assistance, facilitation of norm-setting, and providing a technical forum where international fisheries problems can be considered and addressed.

An important component of FAO’s work on fisheries is the Committee on Fisheries (COFI), a subsidiary body of the FAO Council. As FAO states, “the Committee presently constitutes the only global inter-governmental forum where major international fisheries and aquaculture problems and issues are examined and recommendations addressed to governments, regional fishery bodies, NGOs, fishworkers, FAO and international community, periodically on a world-wide basis.”⁷⁹ COFI provides a forum for governments to discuss current fisheries issues, and to negotiate global agreements and non-binding instruments.

The FAO has turned its attention to high seas fisheries in recent years. The most recent version of the bi-annual FAO report, *The State of World Fisheries and Aquaculture*, has included assessments of the state of high seas fisheries, and noted the damaging effects of trawling on seamounts to high seas and deep oceans biodiversity.⁸⁰ Nevertheless this is a relatively new area for FAO, and, in the absence of effective fisheries management regimes covering these activities, it has not yet been able to recommend action to be taken to address these impacts.⁸¹

⁷⁷ *The State of World Fisheries and Aquaculture 2002*, FAO, at 26.

⁷⁸ Article 1(2) of the FAO Constitution provides that “The Organization shall promote and, where appropriate, shall recommend national and international action with respect to:

- (a) scientific, technological, social and economic research relating to nutrition, food and agriculture;
- (b) the improvement of education and administration relating to nutrition, food and agriculture, and the spread of public knowledge of nutritional and agricultural science and practice;
- (c) the conservation of natural resources and the adoption of improved methods of agricultural production;

.....
Article 1 of the FAO Constitution defines “agriculture” to include fisheries.

⁷⁹ “What is COFI?”, <http://www.fao.org/fi/body/cofi/cofi.asp>.

⁸⁰ *The State of World Fisheries and Aquaculture 2002*, FAO, at 26.

⁸¹ In contrast, “[i]n order to protect high seas marine living resources, some NGOs have recent suggested that the General Assembly adopting a resolution imposing a moratorium on fishing around high seas seamounts to prevent the further loss of biodiversity in deep sea areas pending the negotiation of a regime for the conservation of those fragile ecosystems”, See A/58/65; para. 230.

D. Land based pollution

(i) Potential impacts

Land-based activities are responsible for eighty per cent of the pollution of the oceans. Pollution resulting from sewage, agricultural and industrial chemicals, and industrial organic wastes has caused serious, pervasive and continuous degradation of coastal ecosystems⁸². Population growth in coastal cities is increasing the level of discharges. Land deforestation has also contributed to the silting of coastal waters. Runoff from agricultural activities and sewage can lead to excessive nutrients in the seas, leading to eutrophication, changing species diversity by excessive algal growth and toxic algal blooms. Additional problems are created by persistent organic pollutants, radioactive substances, heavy metals and oils. Even intensive forms of aquaculture have affected commercial fish due to mangrove-clearing and intensive use of antibiotics to control diseases⁸³.

While pollution from land based activities will continue to have the greatest impact in coastal areas, such pollution may also have an impact in the high seas and deep oceans. Marine debris have been found on the deep seabed.⁸⁴ Air borne pollution has impacts on the high seas.⁸⁵ Metals enter the sea from power plant emissions, mining and manufacturing, as particles. Contaminated particles may flow downstream in rivers to the coast. Some are even carried out to deep ocean areas.⁸⁶ The situation is similar with other pollutants like radionuclides and synthetic organics.⁸⁷ Another potential source of pollution that may also be found beyond coastal waters are toxics due to aerial emissions from incinerators.⁸⁸ This illustrates that open oceans are not free from pollution from land-based sources. Furthermore, concentrations of PBCs have been found in oceanic areas in comparable levels to those in coastal areas of developed countries.⁸⁹ Another factor of concern is that natural processes may transport pollutants long distances. For instance, breakdown products of DDT have been found in the fat of Antarctic penguins, several hundreds of kilometers away from their original source.⁹⁰ Also, POPs accumulate in the Arctic notwithstanding that the sources

⁸² A/58/65; para. 185, at 56.

⁸³ A/58/65; para. 186-190, at 56-58.

⁸⁴ GESAMP (IMO/FAO/UNESCO-IMO/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) and Advisory Committee on Protection of the Sea 2001, *Protecting the Oceans from Land-based activities: Land based sources and activities affecting the quality and uses of the marine, coastal and associated freshwater environment*, Rep. Stud.GESAMP No.71, para 2.4.9.

⁸⁵ *Ibid*; para.2.3.3.

⁸⁶ Norse; *op. cit*; at 118.

⁸⁷ *Ibid*; at 120.

⁸⁸ *Ibid*; at 120- 121.

⁸⁹ *Ibid*; at 120.

⁹⁰ *Ibid*; at 122.

of pollution are all scattered around the globe.⁹¹ This shows that it is not possible to exclude the assumption that portions of the high seas are also subject to the adverse impacts caused by POPs.

In addition to pollution from land based activities, another source of marine pollution which has the potential to impact upon biodiversity of the high seas and deep oceans is that emanating from off-shore installations, such as oil rigs, fish farms, or tourist facilities.⁹²

(ii) Existing regulation

The framework for protection of the marine environment from land based activities, although primarily devised with a focus on coastal waters and waters under national jurisdiction, is also relevant to areas beyond national jurisdiction – the high seas and deep oceans. Certainly it is safe to assume that effective implementation of this framework would contribute positively to the conservation of biodiversity of the high seas and deep oceans. LOSC provides only a general framework to prevent, reduce and control pollution from land-based sources. Generally, LOSC lays down obligations for States to develop their domestic legal framework in this area and to develop rules and standards at the global and regional levels.⁹³ More recently, the two key instruments are the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), and the Montreal Declaration on the Protection of the Marine Environment from Land-based Activities, which was adopted in 2001 at the first intergovernmental review of the GPA.

The GPA addresses the impacts of land-based activities on the marine and coastal environment, including contaminants, physical alteration, and such areas of concern as critical habitats of endangered species and protection of ecosystem components such as breeding and feeding grounds.⁹⁴ UNEP has been designated as leading agency in the implementation of the GPA, and runs a GPA Coordination Office in The Hague, which has a mandate to promote and facilitate implementation of the GPA at the national level; at the regional and sub-regional level, including through a revitalization of the UNEP Regional Seas Programme; and at the international level, through coordination with other organizations and institutions. According to UNEP, some level of progress has been achieved in the implementation of the GPA at the global, regional and national levels.⁹⁵ Although, it has been recognized that progress has been slow.⁹⁶ There should be more determination on the part of national governments

⁹¹ Orheim, Olav. “Protecting the environment of the Arctic ecosystem”. Presentation at the Fourth Meeting of UNICPOLOS (2-6 June 2003).

⁹² A/57/57; paras. 425-429, at 70-71.

⁹³ LOSC; Article 207.

⁹⁴ A/57/57; para. 348 at 59-60.

⁹⁵ See UNEP’s Report on the Implementation of the GPA for the Fourth Meeting of UNICPOLOS, 2-6 June 2003.

⁹⁶ *Ibid.*

in implementing the GPA in light of the evidence that most marine and coastal pollution comes from land-based sources. There also needs to be full recognition at the policy level of the links between freshwater and coastal and marine environments in order to attain meaningful results.

An important force behind its implementation is the GPA Coordination Office itself. In this respect, a useful tool of information for its implementation is the Web's GPA Clearing-House Mechanism, which includes, among other things, a node on Physical Alteration and the Destruction of Habitats. In addition, UNEP has formed an Informal Coordinating Group on Oceans, Coasts and Islands, to achieve coordination and cooperation in implementing of actions under the GPA.⁹⁷

While the GPA covers pollution from all land based activities, the general applicable framework governing pollution from off-shore installations is provided by the LOSC.⁹⁸ The Convention refers as measures to protect and preserve the marine environment those relating to pollution from installations and devices used in exploration or exploitation of natural resources of the seabed and subsoil. MARPOL 73/78 and the London Convention and its 1996 Protocol⁹⁹ are also an integral part of this regulatory framework. It seems that this is an ambit where further studies need to be carried out to assess the impacts of these activities to the marine environment of the high seas, as well as the implementation of the existing legal framework to these areas.

In the case of the removal of structures on the high seas, there is a group of interconnected provisions in LOSC which deal with this issue.¹⁰⁰ They provide that the removal of structures and installations has to be performed taking into account any general accepted international standards¹⁰¹ and having due regard to fishing and the protection of the marine environment and the interests of other States in the exercise of the freedom of the high seas. Implicitly, under LOSC it is only necessary to partially remove these structures and installations. Apart from the question that LOSC does not contain an express obligation to remove entirely such structures, the link between its various provisions which deal with the subject suffer from ambiguity. Nevertheless, it seems clear that in case of removal measures to protect the marine environment need to be carried out even if the structures are located in the high seas.

⁹⁷ *Ibid.*

⁹⁸ See LOSC; Article 194 (3) (d).

⁹⁹ A/57/57; para. 429, at 71.

¹⁰⁰ LOSC; Articles 87(1) (d) and (2); 80; 60(3).

¹⁰¹ In the case of removal of the structures, see the 1989 IMO Guidelines and Standards for the Removal of Off-shore installations or Structures on the Continental Shelf and in the Exclusive Economic Zone.

E. *Marine scientific research and the utilisation of genetic resources*

Marine scientific research has been the key to our increasing understanding of the high seas and deep oceans. In the case of deep oceans, long term and large-scale research has only recently commenced¹⁰². Such research is an essential tool to assist States and institutions to understand and to sustainably manage these areas.

A specific form of marine scientific research which is attracting increasing interest is research into the genetic resources of the deep seabed. Indications are that there are significant biotechnology possibilities, with commercial exploitation a real possibility, in particular for the pharmaceutical industry.¹⁰³ Consequently, international interest in the potential uses of genetic resources of the deep seabed is growing.

(i) Potential impacts

While marine scientific research is essential, it is not without potential impacts upon the ecosystems which are the subject of enquiry. Marine scientific research may threaten hydrothermal vents by extracting repeated samples on a small number of sites. In addition, bio-prospectors may need significant quantities of a particular sample to extract quantities of a certain chemical compound. In fact, IUCN reports that such activities have already had impacts on vent systems in a number of areas.¹⁰⁴

(ii) Existing regulation

Marine scientific research is governed by a specific regime set out in the Law of the Sea Convention, and states conducting such research must do so in a manner consistent with the general obligation under LOSC to protect the marine environment.¹⁰⁵ LOSC provides that, in the Area, all States and competent international organizations have the right to conduct marine scientific research¹⁰⁶ and it shall be carried out exclusively for peaceful purposes and for the benefit of a mankind as a whole¹⁰⁷. However LOSC also does not specifically regulate the exploitation of genetic resources. The Convention on Biological Diversity, on the other hand, does apply (see below).

¹⁰² WWF/IUCN (2001) *The status of natural resources on the high seas*, WWF/IUCN, Gland, Switzerland, at 5.

¹⁰³ Report of the Independent World Commission on the Oceans, *The Ocean, Our Future*, Cambridge University Press (1998), at 70.

¹⁰⁴ WWF/IUCN (2001) *The status of natural resources on the high seas*, WWF/IUCN, Gland, Switzerland, at 18.

¹⁰⁵ LOSC; Article 192.

¹⁰⁶ LOSC; Article 256.

¹⁰⁷ LOSC, Article 143 (1).

A number of attempts have been made to consider the issue of conservation and use of deep seabed genetic resources. The CBD Conference of the Parties' Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA) has, together with the UN's Division on Ocean Affairs and Law of the Sea (DOALOS), undertaken a study of the relationship between the 1982 LOSC and the CBD with regard to the conservation and sustainable use of genetic resources of the deep seabed¹⁰⁸. The report concludes that "an important legal lacuna exists with respect to commercially oriented activities relating to marine genetic resources in the Area. This lacuna will need to be addressed by the international community given the increasing importance of genetic resources in these areas and the threat posed to them by various activities that may be carried out without due regard to conservation and equity imperatives". Similarly, the Independent World Commission on the Oceans stated in its report that "the potentials of the genetic resources of the seabed should become the subject of urgent studies, focusing on their legal, environmental and economic implications, and negotiations leading to their inclusion within an appropriate international regulatory regime"¹⁰⁹.

Although the ISA is restricted by its mandate to consider exploitation of minerals, it does have an obligation to adopt rules, regulations and procedures for the protection and conservation of the natural resources of the Area and the prevention of damage to flora and fauna of the marine environment.¹¹⁰ This can be read as authority to regulate seabed biodiversity, if only from the impacts of exploration for and exploitation of minerals. The ISA may also carry out scientific research and has the duty to promote and encourage the conduct of research¹¹¹. Consequently marine scientific research relating to genetic resources is part of this regime.¹¹² However the ISA clearly cannot establish a regime to deal with bioprospecting per se under its current mandate.

The CBD Secretariat also has a role, despite its limited focus on biological diversity beyond national jurisdiction,¹¹³ as Article 5 of the CBD promotes

¹⁰⁸ The report was produced in response to a request by the Second Conference of Parties to the CBD; Decision II/10, para. 12.

¹⁰⁹ Report of the Independent World Commission on the Oceans, *The Ocean, Our Future*, Cambridge University Press (1998), at 71.

¹¹⁰ LOSC; Article 145.

¹¹¹ LOSC, Article 143 (2).

¹¹² UNEP/CGD/SBSTTA/8/INF/3/Rev.1, para. 45 at 13.

¹¹³ The jurisdictional scope of the CBD applies to areas beyond the limits of national jurisdiction limited to "process" and "activities". The distinction is made in the sense that Article 4 of the CBD applies in relation to components of biological diversity only in areas within the limits of national jurisdiction. Arguably, this approach excludes the application of certain provisions of the Convention (e.g. Article 15 - access to genetic resources), particularly the provisions which apply purely within the ambit of national jurisdiction (Article 5).

cooperation among States, including through relevant international organizations, regarding areas beyond national jurisdiction.¹¹⁴

More active cooperation and coordination on this issue is clearly needed given the high stakes involved - the uniqueness and vulnerability of deep sea ecosystems, as well as issue of equity in utilization of ocean resources in an area which is consider the common heritage of mankind. These questions of equity and coordination are considered later in the paper.

3. Other relevant international institutions

In addition to the sectoral institutions focused on specific activities or threats to the marine environment, there are a number of institutions with a broader focus which are also relevant to our consideration of institutions relevant to the conservation and management of high seas and deep oceans biodiversity. A number of these are listed in paragraph 56 of General Assembly Resolution 57/141, including the United Nations Environment Programme, the Secretariat of the Convention on Biological Diversity and the United Nations Secretariat Division for Ocean Affairs and the Law of the Sea.

The United Nations Environment Programme (UNEP) has a number of programmes relevant to the biodiversity of the high seas and deep oceans. Its Global International Waters Assessment (GIWA) project is intended to produce a comprehensive and integrated global assessment of international waters, encompassing the ecological status, and causes of environmental problems of international waters – including high seas areas. This could potentially be a useful tool in identifying threats to high seas and deep oceans biodiversity.

Another global mechanism with a mandate which encompasses biodiversity of the high seas and deep oceans is the Secretariat of the Convention on Biological Diversity. The Secretariat runs a number of work programmes to implement aspects of the Convention. One of these work programmes is to implement the Jakarta Mandate on Marine and Coastal Biological Diversity - a programme of action agreed to by States Parties in 1995. Areas of focus include integrated marine and coastal area management, the sustainable use of living resources, protected areas and alien species.

¹¹⁴ The CBD Secretariat has elaborated on the question of interagency coordination, noting that “by exchanging information and by disseminating the results of the research, ISA, IOC, CBD and other bodies could promote a better basis for: (a) identification of processes and activities which have or likely have significant adverse impacts on marine biodiversity; (b) improved notification schemes in cases of emergencies; (c) compilation of data for assessments of the state of marine environment; (d) promote capacity-building schemes; (e) identification of appropriate mechanisms for the establishment and effective management of marine and coastal protected areas beyond national jurisdiction. UNEP/CBD/COP/7/3, para. 20, at 73.

The CBD Secretariat has focused on high seas and deep oceans biodiversity specifically; as noted above, the Conference of Parties tasked the Executive Secretary of the CBD to undertake, in consultation with the UN Division on Oceans and the Law of the Sea, “a study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed, with a view to enabling the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to address at future meetings, as appropriate, the scientific, technical, and technological issues relating to bio-prospecting of genetic resources on the deep seabed”.¹¹⁵ The subsequent SBSTTA report suggests that the COP should recommend that the General Assembly invite relevant institutions “to review issues relating to the conservation and sustainable use of genetic resources of the deep seabed beyond the limits of national jurisdiction and make appropriate recommendations to the General Assembly regarding appropriate actions”.

The International Oceanographic Commission (IOC) of the UN Economic Social and Cultural Organisation (UNESCO) is another institution with a mandate which encompasses biodiversity of the high seas and deep oceans. The IOC focuses on promoting marine scientific research into the nature and resources of the oceans; its work includes “developing and facilitating international oceanographic research programmes to improve understanding of global and regional ocean processes and their relationship to the sustainable development and stewardship of ocean resources”; the establishment and co-ordination of an operational global ocean observing system; and the dissemination of ocean data and information.

While the IOC has a mandate which encompasses research into high seas and deep oceans biodiversity, it does not appear to have made this a priority in its work to date. For example, while the IOC has a study group on benthic indicators, the focus of this study is on developing health indicators of *coastal* benthos communities. There is clearly scope for additional work to be done by the IOC in facilitating marine scientific research focused on improving our understanding of the biodiversity of the high seas and deep oceans.

Another body working in the field of marine science is the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). GESAMP is an advisory body of experts nominated by specific UN agencies - UNEP, UNESCO, FAO, IOC, IMO, IAEA as well as the World Health Organisation, World Meteorological Organisation and the UN Secretariat. Its role is to provide advice relating to the scientific aspects of marine environmental protection to the sponsoring organizations, other UN organisations and to Member States of the United Nations organizations on particular problems referred to it through a sponsoring organization. GESAMP also has a mandate “to prepare periodic reviews and assessments of the state of the marine environment and to identify problems and areas requiring special attention”. Its

¹¹⁵ CBD Conference of the Parties Decision II/10, para 12.

recent report, “A Sea of Troubles”, is an attempt to meet this mandate; however, while the report contains some observations relevant to the conservation and management of high seas and deep oceans biodiversity, it does not contain concrete recommendations for action in this area.

The key institution with a general mandate on oceans and law of the sea issues is the UN Secretariat’s Division of Ocean Affairs and Law of the Sea (DOALOS). DOALOS acts as the Secretariat for LOSC and related instruments, and provides secretariat services to a number of law of the sea institutions. It monitors and reports to the General Assembly on all aspects related to oceans and the law of the sea. DOALOS coordinates and prepares the Secretary-General’s annual report on oceans and the law of the sea, which is the most comprehensive assessment each year of developments relating to the world’s oceans. DOALOS has, in preparing the report in the last few years, emphasized the need for effective action to manage and conserve biodiversity of the high seas and deep oceans¹¹⁶.

DOALOS has increasingly become the focal point for efforts to coordinate disparate actors on specific oceans issues – for example, DOALOS is coordinating a taskforce of relevant international institutions to consider flag state implementation in the wake of the sinking of the “Prestige” in September 2002.

The political institutions – Fora for discussion of oceans issues by UN Member States

To gain a full picture of the framework of international institutions relevant to the conservation and management of high seas and deep oceans biodiversity, it is necessary to look beyond both the sectorally focused institutions and the institutions with a broader focus, and examine the relevant political fora as well.

The key political forum is the United Nations General Assembly. The General Assembly’s annual consideration of oceans and law of the sea provides an opportunity for all Member States to raise issues relevant to the oceans and law of the sea. The annual General Assembly resolution on oceans and law of the sea, combined with related resolutions on fisheries, provides general policy guidance to a wide range of international institutions as well as to States. The resolution identifies a broad range of pressing issues, and gives specific instructions to international institutions on actions to be taken. The resolution is a tool to enhance implementation of LOSC and related instruments. It is the means by which new issues can be brought before the international community. Paragraph 56 of Resolution 57/141 is one example of Member States using the resolution to identify an issue and instruct international institutions to take action to address the issue.

¹¹⁶ Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), paras 176, 180-181, 183, 192, 195, 228, 230, 238.

An important recent development has been the establishment of another forum within the General Assembly framework for UN Member States to discuss oceans issues – the UN Informal Consultative Process on Oceans and Law of the Sea (UNICPOLOS). UNICPOLOS was established in 2000 to provide a forum for informal discussions on pressing issues in the area of oceans affairs.¹¹⁷ It enables States, international institutions, NGOs and other actors to explore problems, exchange views and identify action which should be taken to address these problems. As the annual meeting of States Parties to the LOSC has strikingly failed to provide a forum for discussion on effective implementation of the Convention, UNICPOLOS has become the forum for such discussions. The format of UNICPOLOS, with its focus on two issues each year and use of panels of experts to explore these issues and initiate debate, has proved a success, and has undoubtedly enriched the General Assembly’s annual debate on oceans and law of the sea.¹¹⁸

The need to conserve and manage biodiversity of the high seas and deep oceans has been raised at each of the four UNICPOLOS meetings in some manner by a number of delegations. This process obviously has had an impact; at the third UNICPOLOS meeting in 2002, the meeting concluded that “relevant international organizations, including FAO, IHO, IMO, the [International Seabed] Authority, UNEP, WMO, the Secretariat of the Convention on Biological Diversity and the United Nations Secretariat (Division for Ocean Affairs and the Law of the Sea), with the assistance of regional and subregional fisheries organizations, to consider urgently ways to integrate and improve on a scientific basis the management of risks to marine biodiversity of seamounts and certain other underwater features within the framework of the Convention.” Of course, the General Assembly later took up this conclusion, including it in Resolution 57/141 as paragraph 56. At the fourth UNICPOLOS meeting, in June 2003, high seas biodiversity was a dominant issue, with many delegations calling for action to conserve and manage high seas and deep oceans biodiversity.

In addition to the standing institutions such as the UN General Assembly and its Informal Consultative Process on Oceans and Law of the Sea, there are also one-off fora for discussion of oceans issues by UN member states. The most crucial of these fora was undoubtedly the World Summit on Sustainable Development, held in Johannesburg in August 2002. The chapter on Oceans and Coastal Areas in the Johannesburg Plan of Implementation is the most comprehensive and direct high-level policy document on the sustainable development of the world’s oceans and coasts since Chapter 17 of Agenda 21, adopted at the UN Conference on Environment and Development in 1992. The Johannesburg Plan of Implementation highlights the need for measures to conserve and manage biodiversity in areas beyond national jurisdiction, calling for “action at all levels ... to maintain the productivity and biodiversity of important

¹¹⁷ The Process was established by A/RES/54/33.

¹¹⁸ A/RES/57/141, Preamble.

and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction”; and to “develop national, regional and international programmes for halting the loss of marine biodiversity”.

An important additional element of the Johannesburg Plan of Implementation is the call for “the establishment by 2004 of a regular process under the United Nations for global reporting and assessment of the state of the marine environment ...”. The General Assembly reiterated this call for a regular process of global marine assessment in Resolution 57/141, requesting the Secretary-General to consult all interested parties, to prepare proposals on modalities for the global assessment, and to submit such proposals to the General Assembly in 2003 for consideration and decision.¹¹⁹ It will inevitably involve a number of existing institutions working together, with UNEP and GESAMP likely to play significant roles. The Global Assessment, once established, should be a valuable tool to enhance understanding of the state of the marine environment, and to guide policy makers at the international level. In order to be truly global, the assessment will need to consider the state of the marine environment of the high seas and deep oceans. If it does so effectively, it could be the first comprehensive assessment of these areas.

¹¹⁹ For an overview of the process of establishing the global assessment of the state of the marine environment, see Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), paras. 244 – 246.

3. What institutional gaps exist?

Having identified the range of institutions with mandates relevant to the conservation and management of the biodiversity of the high seas and deep oceans, it is now possible to identify the gaps in this regulatory framework. There are several types of gaps in the institutional framework: gaps in sectoral regulation; gaps between the current actions of relevant institutions and potential action; and gaps in coordinating structures.

A. Gaps in sectoral regulation

Although the existing regulatory bodies or frameworks, taken in combination, provide some basis for the conservation and management of high seas and deep oceans biodiversity, the approach is still very much a sectoral, or activity-specific, one. A number of relevant institutions do not have a specific focus on oceans and sea related matters. Further, the mandates of many institutions were established without reference to those of other institutions. The result is a patch work of different institutions, each with a different focus and different programmes of work. Institutional gaps inevitably result from this sectoral approach.

Exploration for and exploitation of marine genetic resources of the deep oceans beyond national jurisdiction, or bio-prospecting, is one activity not currently subject to any specific regulatory regime. As the recent study on the subject by DOALOS and the CBD Secretariat concluded, “there is an important legal lacuna with respect to commercially oriented activities relating to marine genetic resources in deep seabed areas beyond national jurisdiction”.¹²⁰ While the ISA is aware of the issue, its focus is necessarily limited to ensuring that activities within its mandate – exploration for and exploitation of minerals – are conducted in a manner consistent with conservation and management of the biodiversity of the deep oceans.¹²¹ As the Secretary-General’s 2003 Report on Oceans and Law of the Sea concludes, this gap will have to be addressed by the international community. Some commentators have suggested that the scientific community could, if only as an interim measure, take a voluntary initiative to adopt a code of conduct, with the oversight of IOC.¹²²

Another activity for which there is no specific regulatory regime or institution is fishing for exclusive high seas stocks. While FAO can increase its efforts in highlighting the problem, effective action by States to ensure conservation and

¹²⁰ Report of the Executive Secretary of the CBD Secretariat, “Marine and Coastal Biodiversity: Review, Further Elaboration and Refinement of the Programme of Work - Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed (decision II/10 of the Conference of the Parties to the Convention on Biological Diversity)”, UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 36 (22 February 2003). See A/58/65; para. 147.

¹²¹ ISBA/8/A.1, para 50-54.

¹²² Glowka, *op. cit.* at 197-201.

management of exclusive high seas stocks is only likely to be taken under the framework of regional fisheries management organizations with real powers to set appropriate conservation and management measures and to enforce them.¹²³

B. Gaps between the current actions of relevant institutions and potential action

Where institutions do exist to regulate a specific activity which might impact upon biodiversity of the high seas and deep oceans, it is necessary to ask whether those institutions are doing all that their respective mandates permit. If not, a “gap” exists between the current scope of regulatory action taken by a relevant institution, and the potential for action. In short, more could be done by that institution, within its mandate, to ensure the conservation and management of the biodiversity of the high seas and deep oceans.

One area in which more could be done is the regulation of navigation on the high seas. A major problem in effective regulation of navigation is the failure of flag states to effectively implement their international obligations. A significant factor in this failure of implementation is the phenomenon of “open registers”, or flags of convenience. While UNCLOS requires that there be a genuine link between the flag state and a vessel, there have been few attempts to give meaning to the concept. This is an issue which falls within the mandate of the IMO, and the IMO needs to do more to address the problem. Such action would significantly improve flag state implementation, and accordingly reduce vessel source pollution, including on the high seas.¹²⁴

Another area in which more could be done is in respect of marine scientific research on the biodiversity of the high seas and deep oceans. As explained above, existing institutions with a mandate to coordinate or conduct marine scientific research such as the IOC and GESAMP have not yet focused in any detail on the nature of, or threats to, the biodiversity of the high seas and deep oceans. Each institution could do more, within their respective mandates, on this issue. Such work would be consistent with calls by the UN General Assembly¹²⁵ and in the Johannesburg Plan of Implementation to improve the scientific understanding and assessment of marine and coastal ecosystems.

A further gap exists with respect to the regulation of bio-prospecting for genetic resources of the deep oceans. While this results from a lacuna in the Law of the Sea Convention and the Convention on Biological Diversity, there are a range of approaches and steps that could be taken for the conservation and sustainable

¹²³ See Burke, W. *The New Law of International Fisheries, UNCLOS 1982 and Beyond*, Clarendon Press, (1994), at 145.

¹²⁴ See Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), paras 85-91. See also outcomes of the Fourth Meeting of the UN Informal Consultative Process on Oceans and Law of the Sea, 2-6 June 2003, forthcoming.

¹²⁵ A/RES/57/141; para. 43.

use of marine genetic resources of the deep seabed within the existing international framework.¹²⁶

In identifying these gaps between the current actions of certain institutions and the potential action which such institutions could take within their mandate, it is important to note that institutions require policy guidance. It is largely up to the policy makers at the international level – States – to provide this guidance to the relevant institutions. Now that States have started to provide this policy guidance – through the General Assembly, UNICPOLOS, and WSSD – institutions will be expected to respond.

C. Gaps in coordinating structures

While there are gaps both in sectoral regulation and between the actual and potential action of a range of institutions, there are nevertheless a significant number of institutions involved, in different ways, in the conservation and management of the biodiversity of the high seas and deep oceans. However coordination of this activity to ensure a holistic and effective approach remain a challenge. There is, in other words, a coordination gap.

A lack of integration and coordination of institutions and activities has been identified as a problem for oceans governance as a whole. Chapter 17 of Agenda 21, adopted at the Rio Conference on Environment and Development stressed the need to strengthen cooperation and coordination among international institutions, with and outside the United Nations system, in marine issues. After Rio, commentators held the view that “in order to achieve sustainable development of oceans resources for the benefit of the entire mankind, it is now necessary to revitalize international institutions and their activities”¹²⁷.

In 1998 the Independent World Commission on the Oceans, in its landmark report “The Ocean, Our Future”, identified the existence of multiple international institutions as a barrier to good oceans governance.¹²⁸ Similarly GESAMP, in its recent publication, “A Sea of Troubles”, identified “the fragmentation and lack of coordination between international programmes and institutions” as a failing that impeded effective action to protect and conserve the oceans.¹²⁹

¹²⁶ See Report of the Executive Secretary of the CBD Secretariat, “Marine and Coastal Biodiversity: Review, Further Elaboration and Refinement of the Programme of Work - Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed (decision II/10 of the Conference of the Parties to the Convention on Biological Diversity)”, UNEP/CBD/SBSTTA/8/INF/3/Rev.1, para 36 (22 February 2003).

¹²⁷ Nandan S. “Existing Institutional framework and mechanisms” in Bautista Payoyo, Peter (ed), *Ocean governance: sustainable development of the seas*. United Nations University Press, Tokyo, 1994 at 30.

¹²⁸ Report of the Independent World Commission on the Oceans, *The Ocean, Our Future*, Cambridge University Press (1998), at 146.

¹²⁹ See GESAMP Report no. 70, *A Sea of Troubles* (15 January 2001), at 26.

Efforts have been made to improve coordination and integration amongst relevant agencies and programmes. One of the main reasons for the establishment of the UNICPOLOS process was to enhance coordination between relevant agencies and programmes. Resolution 54/33, which established the process, placed an emphasis on “identifying areas where coordination and cooperation at the intergovernmental and inter-agency level should be enhanced”.¹³⁰ The UNICPOLOS outcomes and the General Assembly have called for such enhanced coordination amongst institutions every year since.

Unfortunately, little progress has been made in closing this coordination gap. In fact the one mechanism for coordination of the work of UN institutions on oceans and law of the sea matters which did exist – the Sub Committee on Oceans and Coastal Areas (SOCA), a subsidiary body of the UN’s Administrative Committee on Coordination – was abolished by the Secretary-General in 2001 without consultation. The decision to abolish SOCA was not unwelcome in itself - SOCA was widely viewed as ineffective¹³¹; however Member States were concerned that the alternative proposed – ad hoc, task oriented, time bound cooperation by relevant institutions – would not work¹³².

Member States responded by calling, in Resolution 57/141, for the creation of “an effective, transparent and regular inter-agency coordination mechanism on oceans and coastal issues within the UN system”.¹³³ The resolution emphasized that the new mechanism “should have a clear mandate and be established on the basis of the principles of regularity, continuity and transparency”.¹³⁴ A new mechanism has not yet been established, although the Secretary-General advises in his report on Oceans and Law of the Sea that “the High Level Committee on Programmes is actively involved in consultations with all United Nations bodies concerning the possibility of establishing such a mechanism”.¹³⁵ Many States and international organisations re-emphasised the need for an effective coordination mechanism again at the fourth meeting of the UNICPOLOS.

While improved coordination and integration amongst relevant international agencies and programmes is essential for effective conservation and management of oceans and coastal areas generally, the need is particularly great in respect of areas beyond national jurisdiction – that is, the high seas and deep oceans. There is currently no standing institutional structure for the ISA, the Secretariat of the CBD and other relevant institutions to work together on the

¹³⁰ A/RES/54/33, para 2.

¹³¹ Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), para 242.

¹³² Report on the Work of the Informal Consultative Process established by the General Assembly in its Resolution 54/33 in order to facilitate the annual review by the Assembly of developments in oceans affairs at its third meeting, A/57/80, paras 61-63.

¹³³ A/RES/57/141, para 63. The call was also made in the Johannesburg Plan of Implementation; see Para 29(c).

¹³⁴ A/RES/57/141, para 64.

¹³⁵ Report of the Secretary-General on Oceans and Law of the Sea, A/58/65 (3 March 2003), para 241.

questions relating to bio-resources of the deep seabed;¹³⁶ or for the institutions with a stake in marine scientific research – IOC and GESAMP – to work together to facilitate and coordinate research into biodiversity of the high seas and deep oceans. There is no one forum for institutions to discuss their work on common issues and ensure that it fits together.

¹³⁶ Although the SBSTTA of the CBD recommended in March 2003 that the Conference of Parties invite the General Assembly to call upon the relevant international organizations such as UNEP, IMO, IOC, IHO, WMO, CBD Secretariat, and DOALOS to review issues relating to the conservation and sustainable use of genetic resources of the deep seabed beyond the limits of national jurisdiction and to make recommendations to the UNGA regarding appropriate actions.

4. Scope for enhanced regulation

Two changes are required to narrow the institutional gaps which we have identified.

The first is a conceptual change. Enhanced regulation to ensure conservation of high seas and deep oceans biodiversity should be founded on the concepts of integrated oceans management, the ecosystem approach, and the precautionary approach, and meet general considerations of equity. Although reference has been made to some of these concepts by some institutions, these concepts should provide the basic foundation of institutional efforts.

The second change is an organizational change. A coordination mechanism is required which brings together the sectorally focused institutions to consider collective action to ensure conservation and management of high seas and deep oceans biodiversity. This would enable a focus on particular ecosystems, cumulative impacts, and integrated management. It would ensure that each institution is able to exercise its existing mandate in an informed manner, taking into account the perspectives and actions of other institutions. It would go some considerable way towards more effective conservation and management of high seas and deep ocean biodiversity, using the tools that already exist.

A. The conceptual framework

(i) Integrated oceans management

Integrated oceans management requires a regulatory framework or approach which governs all activities which affect an area of ocean space. It also suggests a system of oceans governance based on certain principles – a key one being the “ecosystem approach”, addressed below.

The phrase “integrated oceans management” is not found in the Law of the Sea Convention. However there is a basis for it in the Convention as an appropriate means of implementation. The third line of the preamble to the Convention captures it particularly well: “the problems of ocean space are closely interrelated and need to be considered as a whole”. One of the first articulations of the concept of “integrated oceans management” was in Chapter 17 of Agenda 21, adopted at the Earth Summit in 1992. In that document, coastal states committed themselves “to integrated management of coastal areas and the marine environment under their national jurisdiction.”

Ten years later, the Plan of Implementation of the Johannesburg World Summit on Sustainable Development recognized the need to “promote integrated, multidisciplinary and multisectoral coastal and ocean management at the national

level and encourage and assist coastal States in developing ocean policies and mechanisms on integrated coastal management”. Similarly, the 2002 meeting of the UN Informal Consultative Process on Oceans concluded that “an integrated, interdisciplinary, intersectoral and ecosystem-based approach to oceans management, consistent with the legal framework provided by LOSC and the goals of Chapter 17 of Agenda 21, is not just desirable, it is essential”.¹³⁷

(ii) Ecosystem-based approach

The “ecosystem approach” is an organizing principle for integrated oceans management. LOSC, although referring in places to the “marine environment”, does not expressly mention the “ecosystem approach”. Article 194(5) does require states to take action to protect “rare and fragile ecosystems”. But the concept of regulating ocean uses so as to ensure the overall integrity of marine ecosystems is implicit at best.

Chapter 17 of Agenda 21 was slightly more explicit, calling on States to maintain marine biological diversity. However it was the Convention on Biological Diversity which provided the express international law foundation for the “ecosystem-based approach”¹³⁸. The Conference of Parties to the Convention on Biological Diversity has specifically identified the ecosystem approach as a basic principle for the conservation and sustainable use of marine biodiversity.¹³⁹

By Johannesburg, the notion of an “ecosystem approach” had become integral. States were instructed to “encourage the application by 2010 of the ecosystem approach . . .” This was also addressed in General Assembly Resolution 57/141 on oceans and law of the sea; paragraph 52 of that resolution “*calls upon* States, in promoting the conservation and management of the oceans . . . to develop and facilitate the use of diverse approaches and tools, including the ecosystem approach”.

The ecosystem approach is as applicable to the conservation and management of biodiversity of the high seas and deep oceans as it is to coastal areas. The CBD provides the basis for pursuance of the ecosystem approach in respect of areas beyond national jurisdiction.¹⁴⁰ The UN Fish Stocks Agreement articulates

¹³⁷ Resolution 57/141 also emphasizes the importance of integrated oceans management, noting that “the problems of oceans space are closely inter-related and need to be considered as a whole, through an integrated, interdisciplinary and intersectoral approach”.

¹³⁸ The Conference of the Parties of the Convention has referred to the ecosystem approach as a guiding principle for conservation and sustainable use of biological diversity. See for example CBD COP’s Decision II/8.

¹³⁹ See the Annex to Decision IV/5, which sets out the Programme Of Work arising from Decision II/10 (Jakarta Mandate on Marine and Coastal Biological Diversity).

¹⁴⁰ Article 5 requires that “each Contracting Party shall, as far as possible and as appropriate, cooperate with other Contracting Parties, directly or, where appropriate, through competent international

the ecosystem approach in the context of fishing activities, recognizing the “need to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimize the risk of long-term or irreversible effects of fishing operations”,¹⁴¹ and requiring the establishment of new regional fisheries management organizations, and the updating of existing organizations, to provide an institutional basis for pursuance of the ecosystem approach at the regional level in relation to fisheries activities – both within and beyond national jurisdiction.

(iii) Precautionary approach

The “precautionary approach” is another of the concepts on which enhanced regulation to ensure effective conservation and management of high seas and deep oceans biodiversity should be founded. As articulated in Principle 15 of the Rio Declaration, the precautionary approach requires “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”.

The Conference of Parties to the Convention on Biological Diversity has specifically recognized the importance of the precautionary approach for the conservation and sustainable use of marine biodiversity, stating “the precautionary approach ... should be used as a guidance for all activities affecting marine and coastal biological diversity”.¹⁴²

In the field of oceans management, the precautionary approach has been most developed in relation to fisheries. The UN Fish Stocks Agreement requires that “States shall apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment”.¹⁴³

Given the very preliminary stage of scientific knowledge about the nature and extent of biodiversity of high seas and deep oceans, and the threats to it, application of the precautionary approach is essential.

(iv) Equity considerations

organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity”.

¹⁴¹ UN Fish Stocks Agreement, Preamble.

¹⁴² See the Annex to Decision IV/5. The CBD Secretariat elaborated on the meaning of the precautionary approach in its Decision II/10, annex II, para. 3 (a).

¹⁴³ UN Fish Stocks Agreement, Article 6.

In devising a conceptual framework for conservation and management of the biodiversity of the high seas and deep oceans, equity is another key concept. Any coherent and sound strategy of high seas biodiversity conservation and management needs to reconcile the imperative of sustainable use of ocean resources with the determination that the benefits of that use, including economic profit, be shared in an equitable manner to benefit mankind as a whole,¹⁴⁴ in particular developing countries.

Obviously, this poses a major challenge to states and to the various institutions dealing with oceans issues at the global level. The challenge is particularly stark in the area of exploitation of genetically rich and vulnerable marine biodiversity in the seabed beyond national jurisdiction, an activity which is largely unregulated.

On the one hand, it is unrealistic to expect that equitable sharing of other resources of the high seas and deep oceans can be dealt with in the same way as minerals in the Area – by the creation of a new legal regime and institution specifically designed to provide equitable outcomes to all. Neither is Malta's proposal to transform the UN Trusteeship Council into a widely representative organ with the mandate to exercise trusteeship functions for the "high seas" is unlikely to gain significant support.¹⁴⁵

On the other hand, the existing legal regime does provide some basis for equity as a guiding principle. The preamble of the Law of the Sea Convention articulates the aspiration to achieve equity in marine issues in a broad manner, stating that it "will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment."¹⁴⁶ The Convention also gave normative expression and practical effect to the concept of the "common heritage of mankind", providing that the Area and its resources are the common heritage of mankind.¹⁴⁷ In so doing, it gave effect to the notion of equity in the oceans.

The concept of sustainable development, which emerged at the United Nations Conference on Environment and Development, held in Rio in 1992, includes the concept of generational and inter-generational equity to fulfill the needs of the present generation and of future generations.¹⁴⁸ Ten years after Rio, in 2002, the Johannesburg Declaration on Sustainable Development, reaffirmed the commitment to sustainable development¹⁴⁹.

¹⁴⁴ Report of the Independent World Commission on the Oceans, *The Ocean, Our Future*, Cambridge University Press (1998), Chapter 2, especially at 56-72.

¹⁴⁵ Report of the Independent World Commission on the Oceans, *The Ocean, Our Future*, Cambridge University Press (1998), at 45-46.

¹⁴⁶ LOSC; fourth preambular paragraph.

¹⁴⁷ LOSC; Article 137.

¹⁴⁸ Pinto, C; "The United Nations Convention on the Law of the Sea: sustainable development and institutional implications", in Bautista Payoyo; *op. cit.*; at 3-7.

¹⁴⁹ Johannesburg Declaration on Sustainable Development.

Existing global institutions have also a role to play in attempting to fulfill the widely shared expectations and aspirations of nations, in particular developing States, in fostering the conservation and the sustainable and equitable use of high seas biodiversity.¹⁵⁰ These institutions should therefore promote equity at the international level when fulfilling their mandates and in cooperating and coordinating at the inter-agency level.

B. The organizational change - a model for enhanced regulation

So how is this to be done? What form of institutional structure can be constructed to address the institutional gaps in the UN system, and so enhance conservation and management of the biodiversity of the high seas and deep oceans?

Scope for radical change in the mandates or activities of existing institutions, whether sectorally focused or with a broader mandate, is limited. Rather, any new institutional structure must seek to effectively coordinate these existing institutions. Such a new structure should seek to achieve a number of objectives:

- to ensure that all relevant institutions have access to information about the nature of and threats to the biodiversity of the high seas and deep oceans;
- to facilitate communication between relevant institutions on the actions of each in respect of the management and conservation of the biodiversity of the high seas and deep oceans;
- to encourage all relevant institutions to focus on ways which those institutions can contribute to the management and conservation of the biodiversity of the high seas and deep oceans;
- to enable coordination and integration of these respective activities.

This would go some considerable way to ensuring towards more effective conservation and management of high seas and deep ocean biodiversity.

Coordination of existing institutions

¹⁵⁰ See CBD; Article 1, which provides that “[T]he objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.”

A key element in coordinating a number of different institutions is to designate a person or unit within each institution through which communication should be channeled. Without this, bureaucracy and institutional inertia will quickly curtail efforts to coordinate. Each institution should therefore identify a focal point on biodiversity of the high seas and deep oceans.¹⁵¹

This will not be sufficient. One institution should be given responsibility for ensuring that institutions coordinate their activities, and to drive the process. The most logical institution is DOALOS. Of all the institutions discussed, DOALOS is the one best placed to coordinate efforts of the disparate institutions. As Secretariat to the UN Convention on the Law of the Sea, it has a responsibility to ensure effective implementation of the Convention as a whole, and is not fixated on specific sectoral activities. Importantly, DOALOS as an institution has also demonstrated an understanding of the need for an integrated approach to ocean issues.

In acting as a coordinating institution, DOALOS could convene an inter-agency working group on conservation and management of the biodiversity of high seas and deep oceans. This could be comprised of the identified focal points from each institutions. Such a working group would not need to exist in isolation. Rather, it could fit within the broader “effective, transparent and regular inter-agency coordination mechanism on oceans and coastal issues within the UN system” which the General Assembly called for in Resolution 57/141 and which the Secretary- General is in the process of establishing.¹⁵² The General Assembly, when considering progress towards such a coordination mechanism at the fifty-eighth General Assembly session later in 2003, should specifically identify the biodiversity of the high seas and deep oceans as one of the areas in which coordination is required.¹⁵³ This would be an important step to ensure an institutional structure for integrated ocean management.

DOALOS, in fulfilling a coordination role, would need to work closely with the Secretariat of the Convention on Biological Diversity for technical guidance on the biodiversity of the high seas and deep oceans. The cooperation between these two institutions on the study on the conservation and sustainable use of deep seabed genetic resources beyond national jurisdiction indicates that these two institutions can work together productively on these issues.¹⁵⁴

¹⁵¹ The General Assembly emphasized, in Resolution 57/141, the importance of the designation of focal points by competent international organization for the exchange of information on law of the sea issues. A/RES/57/141, para 65.

¹⁵² See Report of the Fourth Meeting of UNICPOLOS (2-6 June 2003), forthcoming.

¹⁵³ Many States identified the need for enhanced coordination on the issue of conservation and management of biodiversity of high seas and deep oceans at the Fourth Meeting of the UN Informal Consultative Process on Oceans. See Report of the Fourth Meeting, UNICPOLOS (2-6 June 2003), forthcoming.

¹⁵⁴ UNEP/CBD/SBSTTA/8/INF/3/Rev.1.

5. Collection, collation and dissemination of information

A key element in coordinating institutions will be ensuring that all relevant institutions have access to information about the nature of and threats to the biodiversity of the high seas and deep oceans. On this front, fortunately, the timing is good. The initiation of the Global Marine Assessment process will provide a mechanism for the collection, collation and dissemination of information on the nature of and threats to biodiversity of the high seas and deep oceans.¹⁵⁵ The state of biodiversity of the high seas and deep oceans should be identified as a discrete topic for consideration within the framework of the Global Assessment. Relevant institutions, including IOC, GESAMP, FAO, the CBD Secretariat and the ISA should contribute to this process. Once the assessment is complete, DOALOS should ensure its dissemination to all relevant institutions.

The resulting assessment of the state of the biodiversity of the high seas and deep oceans would be the first of its kind. In identifying the nature of the threats to biodiversity, it would provide a basis for integrated management of these areas. To the extent that it reveals a lack of scientific knowledge of various aspects of the biodiversity of the high seas and deep oceans, the Assessment would also provide a basis for the application of the precautionary approach.¹⁵⁶

Development of a plan for integrated management

Coordination of the existing work of relevant institutions as it relates to biodiversity of the high seas and deep oceans is important, but it will not be sufficient. The new institutional structure should work to encourage all relevant institutions to focus on ways in which they can contribute to the management and conservation of the biodiversity of the high seas and deep oceans. This would enable the closing of the gap between the action that each institution is currently taking, and the potential action that that institution could take consistent with its mandate.

What is required, in effect, is a plan for integrated management. This might best be devised in relation to one ecosystem at first – perhaps a seamount or group of seamounts about which a significant amount is known – as a test case. The Global Marine Assessment process might assist in the identification of such an area. Each institution could then contribute, from its area of expertise, to the drawing up of the management plan, under the supervision of the CBD Secretariat. For example, IOC, GESAMP and the CBD Secretariat could determine what marine scientific research would be required to provide adequate

¹⁵⁵ Statement by Iceland at the Fourth Meeting of UNICPOLOS. See Report of the Fourth Meeting, (2-6 June 2003), forthcoming.

¹⁵⁶ Another relevant project is the Census of Marine Life Project, a ten-year international research program with the goal of assessing and explaining the diversity, distribution and abundance of marine organisms throughout the world's oceans. The Project will contribute to the World Atlas of the Oceans. See <http://www.coreocean.org>.

knowledge of the nature of biodiversity and the threats to it; FAO or relevant RFMOs could assess the impact of current fisheries activities on the ecosystem, and suggest potential fisheries conservation measures; the ISA could consider the impacts of exploration for and exploitation of seabed minerals in the Area. The plan drawn up would then provide guidance for each of the relevant institutions with regulatory authority – to the ISA, CBD and the IOC at the international level, as well regional fisheries management organizations and any other relevant regional institutions. It would ensure that, despite their different mandates, all such institutions were aware of the overall situation facing the ecosystems in question, and of the actions taken by other relevant institutions.

Providing political support

All of this requires political support. Interested States must use all available mechanisms to promote the effective conservation and management of biodiversity of high seas and deep oceans through a coordinated and integrated approach by relevant institutions. Some states have already expressed these views in the context of UNICPOLOS and the General Assembly, and the General Assembly has already requested institutions to work together to consider ways to integrate and improve the management of risks to marine biodiversity of high seas and deep oceans. This in effect provides a mandate for efforts to devise a new institutional structure to address this issue. However interested states should continue to provide political support for these efforts by ensuring that the General Assembly resolution continues to emphasise the importance of this issue.

Ensuring adequate funding

Political support should also be combined with adequate funding for any new institutional structure. This need not be significant – after all, much will depend on existing institutions. However many UN agencies face extremely tight budgetary situations, and this can impede their ability to take on any additional role. An institution should not be prevented from participating in coordination meetings, or from playing a role in a working group, simply because there are insufficient funds for key people to travel to regular meetings. This is a reality however, and it should be addressed.

Conclusion

As awareness of the uniqueness of the biodiversity of the high seas and deep oceans grows, there is an increasing recognition the need for effective conservation and management of this biodiversity. States, and some international institutions, have started to focus on the problem. It is clear that relevant institutions can take action within their mandates to address threats to high seas and deep oceans biodiversity, including navigation and maritime

transportation, mineral extraction, fishing activity, land based pollution, and marine scientific research and utilization of biological resources. But the sectoral focus of these institutions, the absence to this point of a specific focus on high seas areas by most relevant institutions, and a general lack of coordination between institutions have prevented effective targeted action to this point.

However effective management and conservation of high seas and deep oceans biodiversity is not out of reach. Relevant institutions, working from a conceptual foundation which includes integrated oceans management, an ecosystem approach and the precautionary approach for the work, and recognizing the importance of equity considerations, can achieve much within existing mandates. Effective coordination between these institutions is the key. This can best be done under the framework of the general coordination mechanism to be established for all oceans related institutions, with a specific inter-agency working group on conservation and management of the biodiversity of high seas and deep oceans, convened by DOALOS. States would need to follow, guide and support the work of this process, through UNICPOLOS and the General Assembly discussions on oceans and law of the sea. Following this model, we should be able to achieve much in the way of effective management and conservation of high seas and deep oceans biodiversity, using the tools we already have.