

Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction

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Executive Summary

In April, 2008, the United Nations *Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction* (UNWG BBNJ) will convene to discuss a range of topics critical to the health of the 64% of the world ocean that lies in areas beyond national jurisdiction (ABNJ). One of the key items on the agenda will be “Whether there is a regulatory or governance gap and, if so, how it should be addressed.”

This paper identifies regulatory and governance gaps at a global level (see Table 1) and at a regional level (see Table 2). The terms regulatory and governance gaps are defined in section 1.2.

Our knowledge of the marine environment and its components, including marine biodiversity, in ABNJ and the impacts of human activities thereon is limited. While fishing activities are widely recognized as the most significant threat to marine biodiversity in ABNJ, the individual and cumulative impacts of the full range of human activities is still largely unknown. The actual or potential impacts of human activities (existing and emerging) on marine biodiversity in ABNJ are summarized in Annex I.

Notwithstanding the recognized role of the United Nations Convention on the Law of the Sea (UNCLOS) as the overarching international legal framework for human activities in or affecting ABNJ and the existence of a variety of treaties and competent international organizations regulating specific activities in ABNJ such as dumping, shipping and fishing (see Annex II), this study reveals that important regulatory and governance gaps still exist in the international regime for the conservation and sustainable use of biodiversity in ABNJ.

Regulatory gaps identified in this study include:

- The absence of an instrument or mechanism to ensure that modern conservation principles building on the general obligations contained in treaties such as UNCLOS, the Convention on

Biological Diversity (CBD) and the United Nations Fish Stocks Agreement (UNFSA) such as the ecosystem approach and the precautionary approach are consistently incorporated and/or applied in all existing global and regional instruments that apply to ABNJ.

- The absence of detailed international rules and standards to implement modern conservation principles for existing activities (marine scientific research (MSR), bio-prospecting, laying of cables and pipelines and construction of various types of installations); unregulated fisheries (e.g. some discrete high seas fish stocks, sharks), and new and emerging activities (e.g. ocean fertilization, climate change mitigation techniques, and potential construction and operation of floating energy and aquaculture facilities).
- The lack of regulation to manage increasing impacts from traditional uses such as shipping, MSR and military activities (e.g. underwater noise, weapons testing) in line with modern conservation principles.
- The lack of specific requirements for modern conservation tools such as environmental impact assessments (EIAs), monitoring and reporting, area-based measures, networks of representative marine protected areas (MPAs), strategic environmental assessments (SEAs),¹ and marine spatial planning to apply to the full range of ocean-based human activities in or having an effect on ABNJ.
- The lack of effective compliance and enforcement mechanisms at global and regional levels for all human activities and measures.
- The absence of legally binding instruments in all ocean regions to provide integrated coverage at the regional level for fisheries and biodiversity conservation.
- The lack of rules or a process to coordinate regulation of interactions between activities occurring in the high seas water column and those

¹ Strategic environmental assessment is the formalized, systematic and comprehensive process of identifying and evaluating the environmental consequences of proposed policies, plans or programmes to ensure that they are fully included and appropriately addressed at the earliest possible stage of decision-making on a par with economic and social considerations, while environmental impact assessment is a process of evaluating the likely environmental impacts of a proposed project or development (CBD COP decision VI/7).

occurring on the extended continental shelf of coastal States.

Governance gaps identified in this study include:

- The absence of mechanisms to ensure coordination and cooperation within and across sectors, States and institutions.
- The lack of an institution or process to oversee and assist where necessary the application of modern conservation principles and management tools to all human activities.
- The lack of an institution or process to ensure the consistent application of modern environmental governance principles such as transparency, accountability, stakeholder participation and intergenerational and intragenerational equity (only the international regime for the mineral resources of the seabed Area has explicit provisions for equitable sharing of economic benefits).
- The absence of an institution or mechanism to assess existing and emerging uses of the oceans, in terms of the obligation to protect and preserve the marine environment and conserve and manage its biodiversity.
- The absence of recognition of standing on the part of States and international organizations both on their own behalf and on behalf of the international community to pursue claims in international tribunals and other fora relating to safeguarding marine biodiversity and the environment in ABNJ.
- The lack of an institution or mechanism to ensure effective compliance and enforcement, including a legal framework for non-flag enforcement at global and regional levels, for all activities and measures to protect the international communities' interest in safeguarding marine biodiversity and the environment in ABNJ.
- Lack of clarity on the applicable regime relating to bio-prospecting and equitable use of marine genetic resources (MGR) in ABNJ.

Lack of participation in and implementation of existing international instruments

The identified regulatory and governance gaps are compounded by:

- a lack of participation in existing global and regional treaties:
 - a number of existing global and regional treaties have not yet entered into force;
 - not all states are party to existing global and regional treaties and states parties normally cannot regulate non-parties or enforce measures against them.
- failures to implement and/or enforce existing global and regional treaties, as well as legally binding and non-legally binding measures adopted by competent international organizations in ABNJ. This includes:
 - failure of states to adequately implement and enforce existing obligations such as the general obligations for states to cooperate in the protection and preservation of the marine environment and the conservation and sustainable use of marine biodiversity and to adequately assess, monitor and control the activities of their nationals, or processes and activities otherwise under their jurisdiction and control in ABNJ, as exemplified in the absence of specific requirements for EIA and on-going monitoring of existing, emerging and new human activities;
 - failure of flag states to implement and enforce these duties on the high seas; and
 - failure of members of RFMOs and other sectoral or global agreements and arrangements to adequately implement and enforce their obligations under these agreements and arrangements.

1 Introduction

1.1 Background and purpose of the study

This ‘Gap Analysis’ identifies and summarizes regulatory and governance gaps in the international regime for the conservation and sustainable use of marine biodiversity in ABNJ. The Gap Analysis complements and should be read in conjunction with *PAPER 2: Options for Addressing Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction* (‘Options paper’), *PAPER 3: Case Study on the Mid-Atlantic Ridge* and *PAPER 4: Elements of a Possible Implementation Agreement to UNCLOS for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction*. The four papers are intended to facilitate discussions at the second meeting of the UNWG BBNJ (and beyond), where one of the key items on the agenda will be “Whether there is a regulatory or governance gap, and if so, how it should be addressed.”

1.2 Definitions of regulatory and governance gaps

The terms regulatory and governance gaps are understood to mean the following:

Regulatory gaps: substantive and/or geographical gaps in the international legal framework, i.e. issues which are currently unregulated or insufficiently regulated at a global, regional or sub-regional level.

Governance gaps: gaps in the international institutional framework, including the absence of institutions or mechanisms at a global, regional or sub-regional level and inconsistent mandates of existing organizations and mechanisms.

Issues can fall under both ‘gap’ categories. For example the absence of a Regional Fisheries Management Organization (RFMO) results in the lack of a competent organization (governance gap) that can regulate fisheries in the region (regulatory gap).

1.3 Outline of the gap analysis

Section 2 contains two tables summarizing the main regulatory and governance gaps at the global level (Table 1) and at the regional level (Table 2). The complete tables are contained in Section 3. The three Annexes provide information on actual or potential impacts of activities (existing and emerging) on marine biodiversity in ABNJ (Annex I) and key existing international instruments and organisations (Annex II). Annex III contains a list of acronyms and abbreviations used in the report.

2 Summary Tables

Table 1: Summary of Regulatory and Governance Gaps at the Global Level

<i>Activity</i>	<i>Regulatory gaps</i>	<i>Governance gaps</i>
<p>General</p>	<p>Modern conservation principles* and management tools** are not consistently incorporated and/or applied in all relevant existing instruments.</p> <p>Lack of specific requirements for EIA, monitoring and reporting, area-based measures and other modern conservation tools to the full range of ocean-based human activities in ABNJ.</p> <p>Lack of rules or a process to coordinate regulation of interactions between activities occurring within the high seas water column and on the extended continental shelf of coastal states.</p> <p>Lack of effective compliance and enforcement mechanisms.</p>	<p>Lack of mechanisms to ensure coordination and cooperation within and across sectors, States and institutions.</p> <p>Lack of a responsible body to ensure:</p> <ul style="list-style-type: none"> • the consistent and coherent application of conservation principles and tools and modern governance norms***; • assessment of consistency of existing and emerging uses of the oceans with these norms. <p>Lack of standing of States and international organisations for community interests.</p> <p>Lack of institutions or mechanisms to ensure effective compliance and enforcement.</p> <p>Lack of clarity on the applicable regime relating to MGR in ABNJ.</p>

<i>Activity</i>	<i>Regulatory gaps</i>	<i>Governance gaps</i>
<p>Existing Activities</p>	<p>Lack of detailed international rules and standards for certain activities in ABNJ such as:</p> <ul style="list-style-type: none"> • MSR; • bio-prospecting; • laying of cables and pipelines; • construction of various types of installations. <p>Unregulated fisheries such as some discrete high seas fish stocks or sharks.</p> <p>Insufficient regulation of increasing impacts from activities such as shipping and military activities.</p>	<p>Lack of a regulatory body for the activities in ABNJ listed under regulatory gaps.</p> <p>Existing institutions with inconsistent or insufficient mandates.</p>
<p>New and Emerging Activities</p>	<p>Lack of detailed international rules and standards for new and emerging activities such as climate change mitigation techniques and potential construction and operation of floating energy and aquaculture facilities.</p> <p>Lack of a regime for assessment of cumulative impacts over time and across all the different sectors.</p> <p>Lack of specific requirements for EIA, prevention or minimization of adverse impacts or conflicts with other activities, or ongoing monitoring of effects.</p>	<p>Lack of a responsible body for reviewing, assessing or regulating new and emerging activities in ABNJ.</p>

* Modern conservation principles include: the ecosystem approach, the precautionary approach, user/polluter pays principle, stakeholder consultation, use of best available scientific information, application of best practices and best available technologies, integrated and adaptive management.

** Modern conservation tools include: EIAs, SEAs, cumulative impact assessments, marine spatial planning and representative MPA networks.

*** Modern governance norms include: regular review of a treaty's effectiveness; transparency in decision-making processes and access to information; accountability (performance review) of institutions and States; mechanisms (such as an ombudsman) or procedures to receive complaints from civil society groups or affected populations; stakeholder participation; and equitable use of resources (intragenerational and intergenerational equity).

Table 2: Summary of Regulatory and Governance Gaps at the Regional Level

<i>Region</i>	<i>Regulatory gaps</i>	<i>Governance gaps</i>
General	<p>In many ocean regions, ABNJ are not covered by regional seas agreements and/or RFMOs or arrangements.</p> <p>Coverage of ABNJ by RFMOs does not always mean coverage of all types of fisheries and/or that biodiversity concerns are taken into account.</p> <p>Existing regional seas agreements applicable to ABNJ does not always imply coverage by regional regulation of all appropriate types of activities.</p>	<p>In many ocean regions, ABNJ have:</p> <ul style="list-style-type: none"> • No regulatory institutions for comprehensive oceans management, biodiversity conservation and/or fisheries management; • Institutions with inconsistent mandates; • Insufficient coordination and sharing of data/information.
Antarctic	No major gaps.	No major gaps.
Arctic	No legally binding instrument for fisheries management or biodiversity conservation (except North East Atlantic sector).	Arctic Council has no regulatory competence.
Atlantic Ocean	<p>No legally binding instrument for biodiversity conservation (except in the North East Atlantic and small areas of high seas in Caribbean region).</p> <p>No legally binding instrument for fisheries management (except tuna/tuna-like fisheries) in East Central, West Central and South-West Atlantic.</p>	<p>No regional regulatory institution for biodiversity conservation in:</p> <ul style="list-style-type: none"> • North-West Atlantic; • Central Atlantic; • South Atlantic. <p>No RFMO or arrangement (except tuna/tuna-like fisheries) in East Central, West Central and South-West Atlantic.</p>
Indian Ocean	<p>No legally binding instrument for biodiversity conservation.</p> <p>No legally binding instrument for fisheries management (except tuna or tuna-like species) in:</p> <ul style="list-style-type: none"> • the Northern Indian Ocean (i.e. region not encompassed by SIOFA). 	<p>No regional regulatory institution for biodiversity conservation.</p> <p>No RFMO or arrangement in Northern Indian Ocean for other than tuna or tuna-like species).</p>

<i>Region</i>	<i>Regulatory gaps</i>	<i>Governance gaps</i>
Mediterranean Pacific	<p>No major gaps.</p> <p>No legally binding instrument for biodiversity conservation (except small high seas enclaves covered by Noumea Convention).</p> <p>No legally binding instrument for fisheries management in:</p> <ul style="list-style-type: none"> • Central and North Eastern Pacific (except IATTC Convention for tuna); • Western Central Pacific for non-highly migratory fish stocks. 	<p>No major gaps.</p> <p>No regional regulatory institution for biodiversity conservation (except for small high seas enclaves covered by Noumea Convention).</p> <p>No RFMO or arrangement in:</p> <ul style="list-style-type: none"> • Central and North Eastern Pacific (except IATTC for tuna); • Western Central Pacific: for non-highly migratory fish stocks.

3 Complete Tables

Table 1: Regulatory and governance gaps at the global level

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
General	<p><u>Key treaties</u></p> <ul style="list-style-type: none"> • UNCLOS • CBD (arts. 1-7, 14, 22) (including meeting of parties) <p><u>Key soft law instruments</u></p> <ul style="list-style-type: none"> • Agenda 21 • Rio Declaration • WSSD Johannesburg Plan Of Implementation <p><u>Relevant organizations</u></p> <ul style="list-style-type: none"> • UN General Assembly • UNICPOLOS • Sectoral bodies such as FAO, IMO, ISA, IWC • Scientific bodies such as UNESCO/IOC 	<p><u>Substantive gaps</u></p> <p>No detailed requirements for conservation and sustainable use of marine biodiversity, or resources (other than minerals and fish) of the Area¹</p> <p>No general mandate or requirement for cooperation for the protection of 'vulnerable marine ecosystems', ecologically and biologically significant areas, or networks of representative MPAs.</p> <p>Insufficient conservation standards for living resources as they:</p> <ul style="list-style-type: none"> • Are based on outdated concept of 'maximum sustainable yield' for target fish stocks, and 'seriously threatened reproductive status' for associated and dependent species; • Focus mostly on regulating direct exploitation (i.e., fishing) rather than other uses that may have adverse impacts. 	<p><u>Lack institutions to enable consistent application of:</u></p> <p><u>Modern conservation principles</u> such as:</p> <ul style="list-style-type: none"> • the ecosystem approach • the precautionary approach • user/polluter pays principle • stakeholder consultation • use of best available scientific information • application of best practices and best available technologies • integrated and adaptive management <p><u>Modern conservation tools</u> such as:</p> <ul style="list-style-type: none"> • SEAs • cumulative impact assessments • marine spatial planning • representative MPA networks

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
General (continued)		<p><u>No specific requirements for EIA or monitoring of:</u></p> <ul style="list-style-type: none"> • seabed activities other than mining, (e.g. cable and pipelines, seabed installations, MSR, bioprospecting, sea-based tourism) • high seas activities other than dumping and some fishing (e.g., shipping, MSR, floating installations (e.g., wave, nuclear, CO₂ mixers) • impacts of high seas fishing activities on outer continental shelves of coastal nations (e.g. deep sea fishing impacts on sedentary species and resources, vulnerable benthic ecosystems) • impacts of outer continental shelf activities on high seas (e.g. seismic testing noise) • military activities • new or emerging uses of the seas <p><u>Marine genetic resources (MGR)</u></p> <ul style="list-style-type: none"> • UNCLOS does not specifically cover genetic resources in ABNJ; • Significant debate whether common heritage of mankind (CHOM) applies to MGR in the Area. 	<p><u>Modern governance norms³ such as:</u></p> <ul style="list-style-type: none"> • Regular review of UNCLOS's effectiveness • Transparency in decision-making processes and access to information • Accountability (performance review) of institutions and States⁴ • Mechanism (such as an ombudsman) or procedure to receive complaints from civil society groups or affected populations • Stakeholder participation • Equitable use of resources (intragenerational and intergenerational equity) other than Area resources⁵ <p><u>Lack responsible bodies at the regional level in many ocean regions:</u></p> <ul style="list-style-type: none"> • for biodiversity conservation or comprehensive oceans management⁶ <p><u>Lack of effective compliance and enforcement mechanisms</u></p> <ul style="list-style-type: none"> • No cooperative inspection, monitoring and control procedures for activities other than fishing and shipping in some regions; • No cooperative surveillance, inspection and enforcement mechanisms, other than on a case-by-case basis.

Existing Activities

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Fishing	<p>UNCLOS, esp. Parts VII and XII</p> <ul style="list-style-type: none"> Flag state duties: arts. 91(1), 94 Conservation of high seas living resources: arts. 116-120 General environmental obligations: arts. 192, 194, 195, 196, 197, 204-206. <p>Other Instruments (including meeting of parties where applicable)</p> <ul style="list-style-type: none"> UNFSA FAO Compliance Agreement Regional fisheries management conventions (see Table 2) CBD, CMS, CITES UNGA Resolutions 	<p><u>UNFSA</u></p> <ul style="list-style-type: none"> Applies only to highly migratory and straddling fish stocks, but not specifically to discrete high seas fish stocks Does not explicitly require Parties to reform RFMOs to ensure conformity with UNFSA. <p><u>Compliance Agreement</u></p> <ul style="list-style-type: none"> Some consider it not to be strictly applicable to unregulated fisheries in areas where no RFMO;⁷ Exemption for vessels under 24m subject to abuse. <p><u>Insufficient regulation</u></p> <p>Many RFMOs are:</p> <ul style="list-style-type: none"> Not regulating all active fisheries within their remit (e.g. sharks) Not assessing or minimizing the impacts of fishing (e.g. bycatch, vulnerable marine ecosystems, discarded and abandoned fishing gear, discharges). 	<p><u>Institutional gaps</u></p> <p>No formal mechanism or responsible body for:</p> <ul style="list-style-type: none"> Ongoing coordination and information sharing among RFMOs Review of flag State, port State or RFMO performance Monitoring and control of trade at a global level⁸ Ongoing coordination and cooperation with regional oceans management organizations <p><u>RFMO governance in some regions has not been updated to include:</u></p> <ul style="list-style-type: none"> Modern conservation principles (e.g. precautionary approach, ecosystem approach) <ul style="list-style-type: none"> Some RFMOs continue to focus on optimum use of target species;(e.g. ICCAT), and do not address conservation or safeguarding marine ecosystems (see Table 2) Modern conservation tools (e.g. EIAs, SEAs, representative MPA networks) Modern <u>governance norms</u>, e.g. <ul style="list-style-type: none"> Exercise of opt out rights at times inconsistent with duty to cooperate and to conserve⁹ Decision-making often does not reflect equitable concerns Often onerous rules for NGO participation.

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Fishing (continued)	<p>Relevant organizations:</p> <ul style="list-style-type: none"> • UNGA • RFMOs (see Table 2) • FAO • Advisory bodies, e.g., ICES, WECAF, CECAF 	<p><u>Port State control</u></p> <ul style="list-style-type: none"> • No uniform legally binding global minimum standards for port state control to combat IUU fishing (yet) <p><u>Geographic gaps</u></p> <ul style="list-style-type: none"> • Not all ABNJ are covered by RFMOs or Arrangements. The FAO fishery advisory bodies in the Central Atlantic are not mandated to adopt legally binding conservation and management measures. <p>The above means, <i>inter alia</i>, that straddling and discrete high seas fish stocks are not under regulation by RFMOs or (interim) arrangements in:</p> <ul style="list-style-type: none"> • Central and perhaps also the North East Pacific • Central and Southwest Atlantic • Northern Indian Ocean • Arctic Ocean, except for the Atlantic sector 	<p><u>Lack of Participation</u></p> <p><u>UNFSA</u></p> <ul style="list-style-type: none"> • 67 parties • Major fishing states still not party (e.g. China, Republic of Korea) • Major power blocks still not party (e.g. most Latin American states) <p><u>Compliance Agreement</u></p> <ul style="list-style-type: none"> • Only 36 Parties; note, however, that the EC participates on behalf of its 25 Member States, which makes participation fairly similar to UNFSA <p><u>In RFMOs</u></p> <ul style="list-style-type: none"> • Some high seas fishing States deliberately fail to join • High seas fishing States seeking to join sometimes not allowed full membership, or an equitable allocation of fishing opportunities • Fishing entities sometimes not allowed to join

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Shipping	<p>UNCLOS, esp. Parts VII and XII</p> <ul style="list-style-type: none"> Flag state duties: arts. 91(1), 94 Prescriptive and enforcement jurisdiction: arts. 211, 217-220 General environmental obligations: arts. 192, 194, 195, 196, 197, 204-206. <p>Other conventions:</p> <ul style="list-style-type: none"> MARPOL 73/78 and Annexes SOLAS Ballast Water Management Convention <p>Relevant organizations:</p> <ul style="list-style-type: none"> IMO 	<p>Substantive gaps</p> <p><u>No legally binding regulations for</u></p> <ul style="list-style-type: none"> Noise, greenhouse gas emissions or alien invasive species from hull spaces; Assessing flag State or port State performance;¹⁰ Requiring port States to provide adequate port reception facilities;¹¹ EIA and life cycle assessment of ship construction, design and equipment standards to promote clean ships and clean seas. <p><u>Insufficient regulations for</u></p> <ul style="list-style-type: none"> Marine debris tracking and retrieval; Oil discharge control and monitoring; Use of evidence from aerial surveillance; Ensuing rapid application of new technologies (existing ships are often ‘grandfathered’); Designating ballast water control areas in ABNJ.¹² <p>Geographic gaps</p> <ul style="list-style-type: none"> Discharge requirements based on distance from land do not protect areas in ABNJ;¹³ Port States may, but are not required to, investigate and prosecute vessel discharge violations that take place on the high seas.¹⁴ Ports of convenience may be weak link. 	<p>Institutional gaps</p> <p><u>No formal mechanism for:</u></p> <ul style="list-style-type: none"> Coordinating and harmonizing regional port State control regimes; Cooperative monitoring or enforcement with respect to non-compliance with discharge requirements; Ensuring accountability for failure to implement flag state duties. <p><u>IMO governance has not been updated to enable consistent application of:</u></p> <ul style="list-style-type: none"> Modern conservation principles, e.g. <ul style="list-style-type: none"> – Precautionary approach not yet formally incorporated into IMO standard setting or decision making procedures Modern conservation tools, e.g. <ul style="list-style-type: none"> – Limited provisions for protection of ‘networks of representative marine protected areas.’¹⁵ Modern governance norms, e.g. <ul style="list-style-type: none"> – Equity—decision making procedures and requirements for entry into force of new instruments may enable major flag States to block ‘greener’ regulation.

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
<p>Dumping Of Wastes And Other Matter</p>	<p>UNCLOS</p> <p>Parts VII, especially Flag state duties: art. 94</p> <ul style="list-style-type: none"> • Part XII, including general obligations arts. 192, 194, 195, 196, 204-206. • Prescriptive and enforcement jurisdiction: arts. 210, 216 <p>Other Conventions</p> <ul style="list-style-type: none"> • London Convention 1972 • London Protocol 1996 <p>Relevant organizations/MOPs:</p> <ul style="list-style-type: none"> • MOP London Convention & Protocol • Some regional oceans management organizations (see Table 2) • UNFCCC/Kyoto Protocol re: CO2 storage? • Kyoto Protocol re: carbon credits? 	<p><u>Substantive gaps</u></p> <p><u>Insufficient regulation of:</u></p> <ul style="list-style-type: none"> • Ocean fertilization (placement of matter (e.g. iron) for the purposes of stimulating phytoplankton blooms should be subject to the permitting requirements for dumping under UNCLOS and the London Convention, and the dumping prohibition of London Protocol¹⁶ but such regulations have not yet been adopted;¹⁷ • Direct injection of CO2 (which could be classified as dumping of industrial waste) is arguably technically prohibited under London Convention, but States and private entities are still considering proposals. <p><u>State responsibility gaps</u></p> <ul style="list-style-type: none"> • London Convention/Protocol do not directly require States to regulate the conduct of their nationals (other than vessels) in ABNJ, unlike UNCLOS, e.g., with respect to activities in the Area; • There are no specific international rules for State responsibility regarding acts done in ABNJ by nationals (other than vessels) subject to their jurisdiction or control. 	<p><u>Institutional gaps</u></p> <p><u>No specific mechanisms regarding:</u></p> <ul style="list-style-type: none"> • Non-compliance by States Parties to UNCLOS but not to the London Convention • Cooperative monitoring and enforcement in ABNJ.¹⁸ <p><u>Inconsistent mandates</u></p> <ul style="list-style-type: none"> • 1996 Protocol is meant to eventually replace the 1972 Convention. Until then, two distinct regimes apply on the high seas, depending on the flag State of the vessel or the origin of the material to be dumped. • Precautionary approach embodied in 1996 Protocol is not reflected in other instruments related to marine pollution. <p><u>Lack of Participation</u></p> <ul style="list-style-type: none"> • London Convention: 82 Parties • London Protocol: 31 Parties

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Marine Scientific Research (MSR)	<p>UNCLOS</p> <ul style="list-style-type: none"> Part XII environmental duties, including general obligations: arts. 192, 194, 195, 196, 197, 204-206 Part XIII on MSR Part XI on The Area, especially 143, 145, 147. Part VI on Continental Shelf <p>Regional Conventions</p> <ul style="list-style-type: none"> Antarctic Treaty and its Madrid Protocol OSPAR Convention <p>Relevant organizations</p> <ul style="list-style-type: none"> UNESCO Intergovernmental Oceanographic Commission (IOC)¹⁹ <p>International Seabed Authority (ISA)²⁰</p>	<p>Substantive gaps</p> <ul style="list-style-type: none"> No international requirements for EIA, prevention or minimization of adverse impacts or conflicts with other seabed activities, or ongoing monitoring of effects; Government research vessels are exempt from MARPOL 73/78 discharge and other requirements²¹ <p>Geographic gaps</p> <p>No regional regulation of MSR other than in the Antarctic Treaty area south of 60 degrees south latitude, and in the North East Atlantic, where the OSPAR Commission is developing a code of conduct.</p>	<p>Inconsistent mandates</p> <ul style="list-style-type: none"> Unlike MSR relevant to mineral resources of the Area, MSR for other purposes is not subject to strict environmental standards For research on the legal continental shelf, coastal States may withhold their consent to MSR if it involves drilling, the use of explosives or the introduction of harmful substances²² (i.e., potential for adverse impact), but no such provisions exist for non-mining related MSR in ABNJ. <p>Institutional gaps</p> <p>Lack of global institution/mechanism to:</p> <ul style="list-style-type: none"> Review EIAs and assess potential and cumulative impacts Balance any potentially unavoidable harm that may be caused by a particular experiment against the benefits of the ensuing knowledge to humanity.²³ Enhance sharing of information and coordination and cooperation, other than with respect to seabed mining related studies in the Area. Update requirements to enable consistent application of modern governance and conservation principles and tools

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Bioprospecting For MGR	<p>UNCLOS</p> <ul style="list-style-type: none"> Part XII environmental duties, including general obligations: arts. 192, 194, 195, 196. 197, 204-206 Part XIII MSR duties (see MSR above) Part XI on the International Seabed Area? <p>Other Conventions</p> <ul style="list-style-type: none"> CBD-general principles 	<p><u>Substantive gaps</u></p> <ul style="list-style-type: none"> The terms “bioprospecting” and “marine genetic resources” are not mentioned in UNCLOS, and the provisions of CBD do not fully govern MGR in ABNJ; No detailed regulatory requirements for EIA, prevention or minimization of adverse impacts or conflicts with other seabed activities, or ongoing monitoring of effects; Government research vessels are exempt from MARPOL 73/78 discharge and other requirements;²⁴ No specific requirements for equitable use of MGR other than potentially with respect to MGR in the Area. <p><u>Geographic gaps</u></p> <ul style="list-style-type: none"> Other than in the Antarctic Treaty area south of 60 degrees south latitude, and in the North East Atlantic, where the OSPAR Commission is developing a code of conduct, no regional regulation of bioprospecting. 	<p><u>Institutional gaps</u></p> <p>Lack of global institution/mechanism to:</p> <ul style="list-style-type: none"> Review EIAs and assess potential and cumulative impacts; Balance any potentially unavoidable harm that may be caused by a particular experiment against the benefits of the ensuring knowledge to humanity;²⁵ Enhance sharing of information and coordination and cooperation; Provide for the equitable sharing of financial and other economic benefits derived from activities in the Area (which exists for non-living resources); Update requirements to enable consistent application of modern governance and conservation principles and tools. <p><u>Inconsistent mandates</u></p> <ul style="list-style-type: none"> Unlike MSR relevant to mineral resources of the Area, research and bioprospecting related to MGR are not subject to ISA regulation and environmental protections. Initial bioprospecting activities may be indistinguishable from MSR²⁶, but the end products are quite different.

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Constructing Artificial Islands and Installations	<p>UNCLOS</p> <ul style="list-style-type: none"> Part XII: environmental duties, including general obligations: arts. 192, 194, 195, 196, 197, 204-206 Arts. 208 and 214 for pollution from seabed activities subject to national jurisdiction Arts. 209 and 215 for pollution from activities in the Area Part VI (continental shelf) Part XI art. 145 and 147.1-2 for mining-related installations Art. 147.3 and 194.3(d) for non-mining-related installations²⁷ <p>Other Conventions</p> <p>MARPOL 73/78 and its Annexes</p> <p>Relevant organisations:</p> <ul style="list-style-type: none"> ISA (for seabed mineral-related activities) IMO (for discharges) 	<p>Substantive gaps</p> <ul style="list-style-type: none"> Unclear if the references in Arts. 209 and 215 of UNCLOS to “activities in the Area” also refer to non-mining related activities; Arts. 208 and 209 of UNCLOS envision development of global and regional rules and standards for prevention of pollution, but not for biodiversity conservation; No requirement for EIA, prevention or minimization of adverse impacts or conflicts with other seabed activities, or ongoing monitoring of effects. <p>Geographic gaps</p> <ul style="list-style-type: none"> No regulations for impacts, except those related to discharges or seabed mining activities, other than in the Antarctic Treaty area and possibly the Northeast Atlantic through OSPAR. 	<p>Institutional gaps</p> <p>Lack of a responsible body to:</p> <ul style="list-style-type: none"> Regulate seabed activities other than those related to the resources of the Area: <ul style="list-style-type: none"> ISA has no mandate to adopt regulations regarding impacts from seabed activities not related to minerals; Regulate impacts of activities in the water column (e.g., noise), other than discharges; Ensure consultation amongst users to prevent conflicts of use and to conserve biodiversity. Lack updating mechanism to enable consistent application of modern governance and conservation principles and tools.

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Laying Cables And Pipelines	<p>UNCLOS</p> <ul style="list-style-type: none"> • Part VII, specific flag state duties arts. 112-115, 79.5 • Part XII environmental duties, including general obligations: arts. 192, 194, 195, 196. 197, 204-206 <p>Other Conventions</p> <ul style="list-style-type: none"> • 1884 Convention for the Protection of Submarine Telegraph Cables • Antarctic Treaty Environment Protocol and OSPAR Convention at regional level <p>Relevant organization:</p> <ul style="list-style-type: none"> • None 	<p><u>Substantive gaps</u></p> <ul style="list-style-type: none"> • No detailed requirements for EIA, prevention or minimization of adverse impacts or conflicts with other seabed activities, or ongoing monitoring of effects; • No regulations for ongoing monitoring of condition of cables or pipelines and their regular maintenance; • No rules requiring personal responsibility or indemnity for damage to biodiversity in ABNJ, though UNCLOS requires States to adopt laws and regulations necessary to ensure that persons subject to their jurisdiction bear the cost of repair for damage to other cables or pipelines in ABNJ.²⁸ 	<p><u>Inconsistent mandates</u></p> <p>Unlike for the continental shelf, in ABNJ there is no mechanism to:</p> <ul style="list-style-type: none"> • Review and regulate environmental impact of cable or pipeline laying on seabed Area. <p><u>Institutional gaps</u></p> <ul style="list-style-type: none"> • No responsible body for non-minerals related activities in the Area <ul style="list-style-type: none"> – ISA has no mandate to adopt regulations regarding impacts from seabed activities not related to minerals. • Lack updating mechanism to enable consistent application of modern governance and conservation principles and tools.

<i>Activity</i>	<i>Existing instruments and organizations (see also Annex II)</i>	<i>Regulatory gaps</i>	<i>Governance gaps</i>
Archaeology	<p>UNCLOS</p> <ul style="list-style-type: none"> Part XII environmental duties including general obligations: arts. 192, 194, 195, 196, 197, 204-206 <p>Art. 149 (archaeological objects found in the Area)</p> <p>Art. 303 (general provisions on archaeological and historical objects found at sea).</p> <p>Other conventions or regulations</p> <ul style="list-style-type: none"> UNESCO Convention on the Protection of Underwater Cultural Heritage (UCH) (not in force) <p>Relevant organization:</p> <ul style="list-style-type: none"> Under UCH, UNESCO and ISA 	<ul style="list-style-type: none"> No regulations specific to this activity in ABNJ are in place; Under the UCH Convention (not in force), the annex on Rules concerning activities directed at UCH appears to apply only to objects found on the continental shelf, not in the Area;²⁹ UCH Convention encourages non-intrusive observation and tourism, but no rules developed to guide deep sea tourism (see below). 	<ul style="list-style-type: none"> Lack updating mechanism to enable consistent application of modern governance and conservation principles and tools.

Activity	Existing instruments and organizations (see also Annex II)	Regulatory gaps	Governance gaps
Military Activities	<p>UNCLOS,</p> <ul style="list-style-type: none"> - Sovereign immunity Arts. 95, 96, 23630 <p>Other conventions or regulations</p> <ul style="list-style-type: none"> • CBD • Relevant organization: None 	<ul style="list-style-type: none"> • Under UNCLOS, each State is to ensure that its vessels and aircraft act in a manner consistent with the environmental provisions in Part XII (as far as reasonable), but not all navies have adopted well developed environmental protection or pollution prevention policies; • No international measures exist to limit dangers of sonar to marine living organisms; • Many vessels are exempted from the obligations under many international instruments (e.g. MARPOL 73/78, Annexes of the Madrid Protocol to the Antarctic Treaty). 	<ul style="list-style-type: none"> • Lack mechanism to consistent application of modern governance and conservation principles and tools. • No mechanisms to hold States accountable for environmental damage
Overflight	<p>UNCLOS</p> <ul style="list-style-type: none"> • Part XII Environmental duties; • Prescriptive and enforcement jurisdiction: arts. 212, 222 <p>Other Conventions</p> <ul style="list-style-type: none"> • 1944 Convention on International Civil Aviation • London Convention and Protocol (dumping)³¹ <p>Relevant organization:</p> <ul style="list-style-type: none"> • International Civil Aviation Organization (ICAO)³² 	<ul style="list-style-type: none"> • No consideration of the impacts of noise from low altitude flights on marine biodiversity. 	

New and emerging Activities

Activity	Relevant legal instruments and international bodies	Gaps (regulatory and governance)
<p><i>Methane Hydrate Mining</i></p>	<p>UNCLOS</p> <p>Part XII environmental duties. If in Area, Part XI; Part VII, flag State duties and arts. 209 and 215 with respect to pollution from activities in Area. If on extended continental shelf, Art. 208 and 214 with respect to pollution from sea-based activities subject to their jurisdiction.</p> <p>Other Conventions</p> <ul style="list-style-type: none"> • MARPOL 73/78 (as regards discharges) • CBD (processes and activities) <p>Relevant organization</p> <ul style="list-style-type: none"> • ISA if in the Area; the definition of resources in Area as “all solid, liquid or gaseous mineral resources in situ” would include methane hydrates, but the ISA has not yet specifically regulated this activity. Such regulations would also guide methane hydrate related activities on the continental shelf.³³ 	<p><i>Regulatory gaps</i></p> <p>Substantive gaps:</p> <ul style="list-style-type: none"> • No detailed requirements for EIA, prevention or minimization of adverse impacts or conflicts with other seabed activities, or ongoing monitoring of effects; • No explicit requirements for the: <ul style="list-style-type: none"> – Conservation and sustainable use of the ‘components’ of marine biodiversity; or – Recognition and protection of ‘vulnerable marine ecosystems’, ecologically and biologically significant areas, or networks of representative MPAs. <p><i>Governance gaps</i></p> <ul style="list-style-type: none"> • <u>Lack institution/updating mechanisms to enable</u> consistent application of modern governance and conservation principles and tools.
<p><i>Energy Facilities (e.g. Floating Nuclear Power, Wave, Solar)</i></p>	<p>UNCLOS</p> <p>Part VII flag State duties; Part XII environmental duties and UNCLOS rules relating to constructing artificial islands and installations (see above)</p> <p>Other Conventions</p> <ul style="list-style-type: none"> • MARPOL 73/78 (discharges) • CBD (processes and activities) <p>Relevant organization</p> <ul style="list-style-type: none"> • IMO for discharges 	

<i>Activity</i>	<i>Relevant legal instruments and international bodies</i>	<i>Gaps (regulatory and governance)</i>
<p><i>Open Ocean Aquaculture</i></p>	<p>UNCLOS</p> <p>Part VII flag State duties; Part XII environmental duties (particularly art. 196 (introduction of alien or new species)) and UNCLOS rules relating to constructing artificial islands and installations (see above)</p> <p>Other Conventions</p> <ul style="list-style-type: none"> • MARPOL 73/78 (discharges) • CBD (processes and activities) <p>Relevant organization</p> <ul style="list-style-type: none"> • FAO • IMO (discharges) <p>Other conventions or regulations</p> <ul style="list-style-type: none"> • CBD (processes and activities) 	
<p><i>Deep Sea Tourism (e.g. to explore hydrothermal vents, coral reefs and wrecks)</i></p>	<p>UNCLOS</p> <p>Part VII, flag State duties and Part XII environmental duties</p> <p>Other conventions or regulations</p> <ul style="list-style-type: none"> • CBD (processes and activities) • UCH Convention <p>Relevant organization: None</p>	

<i>Activity</i>	<i>Relevant legal instruments and international bodies</i>	<i>Gaps (regulatory and governance)</i>
<p><i>Other Emerging and Potential Future Activities</i></p>	<p>UNCLOS Part VII, flag State duties and Part XII environmental duties</p> <p>Other conventions or regulations</p> <ul style="list-style-type: none"> • CBD (processes and activities) <p>Relevant organization: None</p>	

Table 2: Regulatory and governance gaps at the regional level

<i>REGIONAL OCEAN AGREEMENTS</i>	<i>MANDATE OR OBJECTIVE</i>	<i>Regulatory Gaps</i>	<i>Governance Gaps</i>
<i>Arctic</i>			
		<ul style="list-style-type: none"> No binding legal instrument for either fisheries or biodiversity conservation outside of the Atlantic sector.³⁴ 	<ul style="list-style-type: none"> Arctic Council has no regulatory competence.
<i>Antarctic</i>			
Convention for the Conservation of Antarctic Marine Living Resources , ³⁵ 1980, in force 1982	To ensure the conservation, including rational use, of Antarctic living marine resources	<ul style="list-style-type: none"> No gaps in species or ecosystems within area of competence Cannot regulate by-catch of species of concern to the Antarctic ecosystem (e.g. seabirds) when such species are located outside the treaty area. 	<ul style="list-style-type: none"> Inability to regulate the activities of fishing vessels from non-member states despite UNCLOS/UNFSA duty to cooperate.³⁶ Restricted transparency No RFMO performance review
The Antarctic Treaty ³⁷ , 1959, in force 1963	To ensure that Antarctica shall continue forever <ul style="list-style-type: none"> to be used exclusively for peaceful purposes, to facilitate scientific research and to promote international cooperation in scientific investigations.³⁸ 	<ul style="list-style-type: none"> The boundaries of the Antarctic Treaty and CCAMLR do not coincide, as the AT excludes the Antarctic convergence area.³⁹ 	<ul style="list-style-type: none"> Inability to ensure compliance by non-members, or by nationals of members flagging their vessels to non-member States. Lack of collaborative enforcement measures.⁴⁰
Protocol on Environment Protection (Madrid Environment Protocol) , 1991, in force 1998 (Annex V, 2002)	To establish a comprehensive environmental regime to ensure the protection of the Antarctic environment and dependent and associated ecosystems. ⁴¹	<ul style="list-style-type: none"> Antarctic Specially Protected Areas and Antarctic Specially Managed Areas with a significant marine component cannot be established without the consent of the members of CCAMLR. 	<ul style="list-style-type: none"> Activities subject to requirements for EIA,⁴² but the Committee for Environmental Protection lacks the power to forbid projects likely to have significant adverse impacts.

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p><i>Atlantic</i></p> <p>International Convention for the Conservation of Atlantic Tunas (ICCAT), 1966, in force 1969</p>	<p>To maintain populations of tuna and tuna-like fishes found in the Atlantic Ocean at levels which permit the maximum sustainable catch for food and other purposes. Covers 30 tuna and tuna-like fishes.</p>	<ul style="list-style-type: none"> No direct mandate to safeguard the marine ecosystems in which targeted fisheries resources occur. ICCAT interprets MSY as a target, not a limit. By catch measures for sea turtles and seabirds are only voluntary.⁴³ Directed shark fisheries do not appear to be regulated, though bycatch is.⁴⁴ No cooperative system for boarding and inspection instituted.⁴⁵ 	<ul style="list-style-type: none"> No specific reference to ecosystem approach or precautionary approach in Convention, Not subject to outside performance review, and has not yet conducted an internal audit.
<p>→ <i>North Atlantic</i></p> <p>North Atlantic Salmon Conservation Organization (NASCO)⁴⁶</p>	<p>Conservation, restoration, enhancement and rational management of salmon stocks taking into account the best scientific evidence available to it.⁴⁷</p>	<p>Prohibits fishing for salmon stocks on the high seas of the Convention Area.</p> <p>Only covers salmon stocks.</p>	

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p>→ <i>Northeast Atlantic</i></p> <p>The Convention on Future Multilateral Cooperation in Northeast Atlantic Fisheries⁴⁸ (NEAFC), 1980, in force 1982</p>	<p><i>Original convention:</i> To promote conservation and optimum utilization of fishery resources of Convention area.</p> <p><i>New convention:</i> To ensure the long-term conservation and optimum utilisation of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits.</p>	<ul style="list-style-type: none"> • Only <i>ad hoc</i> actions taken prior to the new Convention to manage non-target and associated species and habitats.⁴⁹ • Historically, no systematic application of an ecosystem approach into all aspects of management.⁵⁰ • Deep sea species were not regulated for many years, now many are beyond safe biological limits.⁵¹ <p><i>New Convention</i> covers resources of fish, molluscs, crustaceans and including sedentary species, excluding, those covered by other international agreements.</p> <ul style="list-style-type: none"> • Will not cover jellyfish or sea cucumber fisheries that are emerging elsewhere 	<ul style="list-style-type: none"> • Original 1980 convention required significant amendments to ensure framework is consistent with modern international legal commitments.⁵² • Transparency—IGOs, NGOs and other observers have had no access to documents before Commission meetings.⁵³
<p>Convention for the Protection of the Marine Environment of the North-East Atlantic⁵⁴ (OSPAR Convention), 1992, in force 1998</p>	<p>Aims to:</p> <ul style="list-style-type: none"> • Promote concerted action to prevent and eliminate marine pollution • Achieve sustainable management of the maritime area, to meet the needs of present and future generations.⁵⁵ 	<ul style="list-style-type: none"> • Covers most human activities in a comprehensive fashion, but not fishing and shipping.⁵⁶ • Impacts of fishing and shipping are to be brought to the attention of the relevant regional or international organization. • There are no formal mechanisms for co-operation, though a memorandum of understanding is under discussion with NEAFC and ICES 	<ul style="list-style-type: none"> • Lacks a collaborative enforcement mechanism.⁵⁷

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p>→ <i>Northwest Atlantic</i></p> <p>Convention on the Future of Multilateral Cooperation in the Northwest Atlantic Fisheries (NAFO), 1978, in force 1982</p>	<p>Optimum utilization, rational management and conservation of fishery resources of NAFO Convention Area.</p> <p><u>Proposed new Convention</u> (draft 20 June): To ensure the long-term conservation and sustainable use of the fishery resources in the Convention area and to safeguard the marine ecosystems in which these resources are found.⁵⁸</p>	<p>Original convention:</p> <ul style="list-style-type: none"> • Covers straddling fish stocks and discrete high seas fish stocks (not salmon, tuna, marlins and whales).⁵⁹ • No direct mandate to safeguard the marine ecosystems in which targeted fisheries resources occur.⁶⁰ • Only <i>ad hoc</i> actions taken so far to manage non-target and associated species and habitats.⁶¹ • Directed shark fisheries remain unregulated, but should be addressed under new Convention.⁶² 	<ul style="list-style-type: none"> • The objection procedure used frequently, making management difficult • Inability to regulate the activities of fishing vessels from non-member states⁶³ • Not subject to outside performance review, and has not yet conducted an internal audit.
<p>→ <i>Central-eastern Atlantic</i></p> <p>Fishery Committee for the Eastern Central Atlantic (CECAF), 1967</p> <p>FAO Article VI advisory body—no regulatory power</p>	<p>The main objectives of the Committee are:</p> <p>(a) to facilitate the coordination of research and to encourage education and training</p> <p>(b) to assist its members in an advisory management capacity in establishing rational policies to promote the rational management of resources.</p>	<p>There is no regional biodiversity agreement in the Northwest Atlantic.</p> <p>No fisheries are regulated (other than tuna and tuna like stocks under ICCAT) in the Eastern Central Atlantic.</p> <p>There is no regional biodiversity agreement in the Central-eastern Atlantic.</p>	<p>There is no regional biodiversity conservation organization in the Northwest Atlantic.</p> <p>There is no regional biodiversity conservation organization in the Central-eastern Atlantic.</p>

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p>→ <i>Central-western Atlantic</i></p> <p>Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention)⁶⁴, adopted 1983, in force 1986⁶⁵</p>	<ul style="list-style-type: none"> To prevent, reduce and control pollution of the Convention area and To ensure sound environmental management, using for this purpose the best practicable means at their disposal and in accordance with their capabilities. 	<ul style="list-style-type: none"> Though Convention applies to high seas enclaves in Gulf of Mexico and Caribbean as well as waters where parties have not yet declared EEZs along their Atlantic coasts, most provisions focus on coastal areas.⁶⁶ Two of the three protocols not in force. 	<ul style="list-style-type: none"> Unlike the OSPAR convention, the UNEP regional seas conventions lack strong monitoring, reporting and assessment provisions.
<p>Western Central Atlantic Fishery Commission⁶⁷ (WECAFC), FAO Article VI advisory body – no regulatory power.⁶⁸</p>	<p>To facilitate the coordination of research, encourage education and training, and assist its members in establishing rational policies to promote the rational management of resources that are of interest for two or more countries.</p>	<ul style="list-style-type: none"> As WECAF is advisory only, no fisheries are regulated (other than tuna and tuna-like stocks under ICCAT) in the Western Central Atlantic. 	
<p>→ <i>Southeast Atlantic</i></p> <p>Convention on the Conservation and Management of Fishery Resources in the Southeast Atlantic Ocean⁶⁹ (SEAFO), 2001, in force 2003</p>	<p>To ensure the long-term conservation and sustainable use of fishery resources on the high seas, other than highly migratory stocks, taking into account other living marine resources and the protection of the marine environment.</p>	<ul style="list-style-type: none"> Highly migratory stocks that are not addressed by ICCAT are also not regulated by SEAFO. Poor participation by distant water fishing states (only four of potential 11 states are parties). 	<ul style="list-style-type: none"> Inability to regulate the activities of fishing vessels from non-member states⁷⁰ <p><i>Note: one of few agreements to require that parties ensure that their nationals and industries fishing in the convention area comply with its provisions.</i>⁷¹</p>
		<p>There is no regional biodiversity agreement in the South East Atlantic</p>	<p>There is no regional biodiversity conservation organization in the South East Atlantic</p>

<i>REGIONAL OCEAN AGREEMENTS</i>	<i>MANDATE OR OBJECTIVE</i>	<i>Regulatory Gaps</i>	<i>Governance Gaps</i>
→ <i>Southwest Atlantic</i>		There is neither an RFMO (FAO area 41) nor a regional biodiversity conservation agreement in the Southwest Atlantic	There is neither an RFMO (FAO area 41) nor a regional biodiversity conservation organization in the Southwest Atlantic
<i>Indian Ocean</i>			
Agreement for the Establishment of the Indian Tuna Commission (IOTC Convention), 1993 ⁷² , in Force 1996. FAO article XIV body	To promote cooperation with a view to ensuring the conservation and optimum utilization of stocks and encouraging sustainable development of fisheries based on such stocks.	<ul style="list-style-type: none"> Only covers tuna and tuna-like species (16 species of tuna, several species of mackerel, marlin, swordfish and sailfish.) Does not regulate bycatch of most non-target species Does not regulate directed shark fishing. 	<ul style="list-style-type: none"> No provisions for precautionary approach or ecosystem-based management in Convention, recent resolutions or practice.⁷³
		There is no regional biodiversity agreement in the Indian Ocean	There is no regional biodiversity conservation organization in the Indian Ocean
→ <i>Southern Indian Ocean</i>			
Southern Indian Oceans Fisheries Agreement ⁷⁴ , adopted 2006, (not yet in force)	To ensure the long-term conservation and sustainable use of fishery resources other than tuna in areas that fall outside national jurisdictions. It contains specific reference to the needs of developing countries, the precautionary approach, ecosystem approach and duty to protect biodiversity in the marine environment.	<ul style="list-style-type: none"> Does not cover northern Indian Ocean. 	

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p><i>Mediterranean</i></p> <p>Agreement for the Establishment of the General Fisheries Council/ Commission for the Mediterranean (GFCM), 1949, in force 1952. Amended 1997, in force 2004⁷⁵</p>	<p>To promote development, conservation and management of living marine resources.</p>	<ul style="list-style-type: none"> • Slow implementation of ecosystem approach.⁷⁶ • Lack of reporting on bycatch from members. • GFCM has not adopted measures to address sea turtle interactions in marine capture fisheries⁷⁷ 	<ul style="list-style-type: none"> • No cooperative enforcement provisions envisaged • Not all of the 24 GFCM parties have accepted the 1997 amendments to the agreement.
<p>The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, 1976 (Barcelona Convention); revised in 1995 (in force in July 2004)⁷⁸</p>	<p>To reduce pollution in the Mediterranean Sea and protect and improve the marine environment in the area, thereby contributing to its sustainable development.⁷⁹</p>	<ul style="list-style-type: none"> • Not all of protocols are in force 	<ul style="list-style-type: none"> • Unable to ensure compliance with regional marine environment protection measures.⁸⁰ • Lacks strong monitoring, reporting and assessment provisions.⁸¹
<p><i>Pacific</i></p> <p>→ North Pacific Central Bering Sea Convention⁸² (CBS Convention)</p>	<p>Conservation, management and optimum utilization of Pollock resources in the Convention Area.</p>	<p>Only covers Pollock stocks (which are currently under moratorium).with no mention of ecosystem protection; however, also possibility of application to other species.</p>	
<p>North Pacific Anadromous Fisheries Commission (NPAFC)⁸³</p>	<p>To promote the conservation of anadromous stocks in the Convention Area.</p>	<p>Covers only seven species of salmon⁸⁴</p>	

<i>REGIONAL OCEAN AGREEMENTS</i>	<i>MANDATE OR OBJECTIVE</i>	<i>Regulatory Gaps</i>	<i>Governance Gaps</i>
<p>→ <i>North-East Pacific</i></p> <p>The Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific; adopted 2002 (not yet in force).⁸⁵</p>	<p>To establish a regional cooperation framework to encourage and facilitate the sustainable development of marine and coastal resources of the countries of the Northeast Pacific for the benefit of present and future generations of the region.</p>	<p>The agreement only applies to maritime areas of Parties, thus there is no regional biodiversity agreement applicable in ABNJ in the Northeast Pacific</p>	<p>There is no regional biodiversity conservation organization applicable in ABNJ in the Northeast Pacific</p>
<p>→ <i>North West Pacific</i></p> <p>North West Pacific Ocean Fisheries Agreement (NWPOFA)⁸⁶, interim agreement adopted in 2007</p>	<p>Sustainable management of fish stocks and protection of vulnerable marine ecosystems in the high seas areas of the North Western Pacific Ocean.</p>	<p>The NWPOFA may or may not be extended to cover the Western and Central Pacific.</p>	
<p>→ <i>Western and Central Pacific</i></p> <p>Convention on the Conservation and Management of the Migratory Fish Stocks in the Western and Central Pacific Ocean⁸⁷ (WCPFC), 2000, in force 2004</p>	<p>To ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in accordance with UNCLOS and UNFSA. Agreement reflects the principle environmental law principles incorporated in UNFSA⁸⁸</p>	<p>There is no regional biodiversity agreement applicable in ABNJ in the North West Pacific.</p> <ul style="list-style-type: none"> • Does not apply to straddling fish stocks or discrete high seas fish stocks. • New South Pacific regional fisheries agreement for discrete high seas fisheries may not include the Western and Central Pacific. 	<p>There is no regional biodiversity conservation organization applicable in ABNJ in the North West Pacific.</p>

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p>Convention For the Protection of the Natural Resources and Environment of the South Pacific Region.⁸⁹ (Noumea Convention), 1986, in force 1990</p> <p>→ <i>Eastern Pacific</i></p> <p>Convention for the Establishment of an Inter-American Tropical Tuna Commission (IATTC)⁹², 1949, in force, 1950</p> <p>Convention for the Strengthening of the Inter-American Tropical Tuna Convention (Antigua Convention), 2004. (<i>Not yet in force</i>)</p>	<p>To ensure that resource development is in harmony with the maintenance of the unique environmental quality of the region and the evolving principles of sustained resource management.⁹⁰ Protocols on dumping and cooperation in combating oil pollution.⁹¹</p> <p>1949 Convention: To maintain populations of yellowfin and skipjack tuna as well as other species <i>taken by tuna vessels</i> at levels permitting MSY year after year.</p> <p>Antigua Convention⁹³ To ensure long-term conservation and sustainable use of tunas and other species taken by tuna-fishing vessels in the EPO, in accordance with relevant rules of international law.</p>	<ul style="list-style-type: none"> Lacks strong monitoring, reporting and assessment provisions. Agreement does not apply to high seas regions not enclosed by exclusive economic zones (high seas enclaves) <ul style="list-style-type: none"> Under its original 1949 convention the IATTC adopted only limited conservation and management measures, principally for bigeye tuna; Only voluntary bycatch measures for seabirds and sea turtles in place; Does not regulate shark fisheries, only bycatch.⁹⁴ 	<ul style="list-style-type: none"> There is no regional biodiversity conservation organization applicable in ABNJ in the South Pacific Region other than in the high seas enclaves. <ul style="list-style-type: none"> The new IATTC convention has not yet entered into a force and currently has a very low level of ratification. No co-operative system of monitoring compliance and enforcement in the convention.

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
<p>→ <i>Southeast Pacific</i></p> <p>Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (Lima Convention), 1981, in force 1986⁹⁵</p> <p>Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific</p>	<p>Convention: To prevent, reduce and control pollution of the marine environment and coastal area of the South-East Pacific and to ensure appropriate environmental management of natural resources.</p> <p>Protocol: To protect and preserve those ecosystems which are fragile, vulnerable or of unique natural or cultural value, with particular emphasis on flora and fauna threatened by depletion or extinction, and shall conduct studies for the purpose of restoring the environment or restocking flora and fauna, where necessary,</p>	<ul style="list-style-type: none"> • Convention applies to the high seas, but only in so far as pollution in the high seas may affect the 200 nm maritime area, • Under the Protocol, Parties can establish protected areas in parts of their extended continental shelf but there is no cooperative mechanism to control the activities in the high seas water column above.⁹⁶ • Lacks strong monitoring, reporting and assessment provisions. 	<ul style="list-style-type: none"> • There is no regional biodiversity conservation organization applicable in ABNJ in the Southeast Pacific other than for limited pollution aspects.
<p>→ <i>Southern Pacific</i></p> <p>South Pacific Ocean Regional Fisheries Management Agreement (SPRFMA)⁹⁷</p>	<p>RFMO will be established and operate consistent with international law, including the United Nations Convention on the Law of the Sea 1982 (UNCLOS) and the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks 1995 (UNFSA), and best practice.⁹⁸</p>	<ul style="list-style-type: none"> • <i>Northern boundary not delimited</i>, thus may not include the Central and Western Pacific region 	

REGIONAL OCEAN AGREEMENTS	MANDATE OR OBJECTIVE	Regulatory Gaps	Governance Gaps
		<p>There is no regional biodiversity agreement for the Pacific for ABNJ, other than the small “high seas enclaves” in the Western Central and South Pacific and with regard to pollution in the Southeast Pacific.</p>	<p>There is no regional biodiversity conservation organization applicable in ABNJ in the Pacific, other than the areas covered by the Noumea Convention.</p>
<p><i>All oceans (bluefin tuna)</i> Commission for the Conservation of Southern Bluefin Tuna⁹⁹ (CCSBT)</p>	<p>To ensure, through appropriate management, conservation and optimum utilisation of SBT.</p>	<ul style="list-style-type: none"> • Only applies to southern bluefin tuna, and not other targeted tuna species, hence its jurisdiction overlaps with some other RFMOs • No direct mandate to safeguard the marine ecosystems in which targeted fisheries resources occur.¹⁰⁰ 	<ul style="list-style-type: none"> • Ecosystem and precautionary approach not expressly referred to in Convention, • Transparency – very restrictive provisions on access to NGOs.¹⁰¹

Annexes

Annex I: Actual or potential impacts of activities (existing and emerging) on marine biodiversity in ABNJ

<i>Existing activities</i>	<i>Actual or potential impacts on marine biodiversity in ABNJ</i>
Fishing	<p>Unsustainable fishing practices (e.g. over-exploitation and the use of non-selective and destructive fishing gear), combined with illegal, unregulated and unreported fishing activities, have made fishing the single greatest threat to species, habitats and ecosystems in marine ABNJ.¹⁰²</p> <p>Slow-growing species (e.g. sharks, some tuna species, sea turtles, cetaceans, sea birds, orange roughy, deep sea corals, and sponges) are particularly vulnerable to overfishing, depletion and destruction.</p> <p>The market for shark fins is motivating overfishing in some areas and as the catch is largely unregulated and unreported, it is placing some shark species at high risk of depletion and potential extinction.¹⁰³</p> <p>Abandoned, lost and derelict fishing gear (e.g. nets, lines, pots, and traps) can ensnare fish and other marine species, damage habitats and pose hazards to navigation for very long periods (decades or more).¹⁰⁴</p> <p>Ranching (i.e., the capture of high value fish for rearing close to the coast) is a relatively new practice that is already depleting bluefin tuna stocks in the Mediterranean. The practice catches juveniles before they have had a chance to breed, demands large amounts of small fish as bait and for food, and is difficult to monitor. It can thus exacerbate the current problems of unsustainable fisheries management.¹⁰⁵</p> <p>Dramatic reductions in great-whale populations has driven some populations to the verge of extinction, and the associated decline in the number of whale carcasses reaching the seafloor may well drive 30-50-% of the species dependant of whale-fall habitat to extinction.¹⁰⁶</p>

Existing activities	Actual or potential impacts on marine biodiversity in ABNJ
Shipping	<p>Increased global density of shipping brings heightened risk of¹⁰⁷ pollution from accidental spills and intentional discharges (legal and illegal),¹⁰⁸ lost or damaged cargo,¹⁰⁹ illegally dumped cargoes,¹¹⁰ sunken ships and cargoes, anti-fouling systems, and emissions.</p> <p>Marine debris in the high seas kill marine life that ingest or become entangled in them, and provide vectors for the spread of invasive alien species that can be transported to new areas via ballast water.¹¹¹</p> <p>Through currents and gravity, most pollutants and dumped materials eventually find their way to the deep sea floor with the potential to damage the rare and fragile ecosystems.¹¹²</p> <p>Vessel emissions can exacerbate climate change, decrease ambient air quality and alter the solar radiation energy budget by increasing cloudiness. Current estimates are that shipping contributes between 5-7% of the global total and is estimated to increase 75% in the next 15 to 20 years.¹¹³</p> <p>Rising underwater noise levels from propellers, machinery and hydrodynamic flow over the hull of ships has the potential to harm marine life and degrade high seas habitats, making them unsuitable for important life-cycle functions (e.g. breeding, feeding or nursery areas).</p> <p>Direct physical impacts (e.g. ship strikes with large cetaceans and sharks, collisions, groundings and anchor damage around shallow banks and seamounts) can threaten vulnerable species, human life and the environment.</p>
Dumping of wastes and other matter	<p>Physical impacts (e.g. smothering, sedimentation, and turbidity) can damage or destroy seabed biota and habitats.</p> <p>Chemical, radioactive or biological pollution can kill or injure species, deplete oxygen, introduce alien invasive species and transfer pathogens and diseases.</p> <p>Historic dumpsites of radioactive wastes, chemical weapons, munitions, industrial wastes, sewage sludge etc. are unmonitored and impacts rarely studied.</p> <p>Sub-seabed storage of CO₂, as recently authorized by parties to the London Protocol (see Annex 2), requires extreme care to prevent and monitor any leakage from the seafloor.</p>

Existing activities	Actual or potential impacts on marine biodiversity in ABNJ
<p>Laying cables and pipelines</p>	<p>Impact depends on facility siting, design characteristics, construction methods and the location, but overall impacts have received little study to date.¹¹⁴</p> <p>Can generate pollution and sedimentation that kills or smothers marine life and destroys habitat during construction and repair (pipelines are vulnerable to leakage or breakage due to landslides, slope instability, or trawl damage).</p> <p>Heavy anchors used by ships during placement or repair can cause extensive physical damage to sensitive benthic organisms such as corals in an area much larger than the area damaged by the cable or pipeline.¹¹⁵</p> <p>Noise, and possibly light and heat from cable ships, ploughs and remotely operated vehicles (ROVs) can affect sensitive wildlife (e.g. whales, fish).¹¹⁶</p> <p>Can interfere with long-term scientific monitoring and research sites that are important for understanding of marine biodiversity.¹¹⁷</p>
<p>Marine scientific research (MSR)</p>	<p>Impacts vary depending on the time frame/scale of the operation, the species and habitats targeted and the manner in which the activity is conducted.</p> <p>Bottom sampling trawls and dredges and installation of scientific equipment can damage/destroy seabed species and habitats through smothering, sedimentation and turbidity.</p> <p>Some experiments can introduce chemical, radioactive or biological pollution, invasive alien species and pathogens, and can disturb sensitive species through intense and chronic noise, light and heat.</p> <p>Experimental introduction of nutrients such as iron can cause shifts in species composition and lower oxygen levels in the water column and seabed¹¹⁸ (see ocean fertilization below).</p> <p>Removal of samples of rare or endemic species for <i>ex situ</i> study could cause extinction of associated and dependant species.¹¹⁹</p>
<p>Bio-prospecting</p>	<p>Similar impacts to MSR, which will also vary depending on the time frame/scale of the operation, the species and habitats targeted and the manner in which the activity is conducted.¹²⁰</p> <p>Also potential for over-harvest (sampling) or by-catch of rare, endemic or fragile species, which could endanger such species and degrade habitats.</p>

<i>Existing activities</i>	<i>Actual or potential impacts on marine biodiversity in ABNJ</i>
<p>Constructing artificial islands and installations</p>	<p>Examples of current seabed or floating facilities not related to seabed mining include scientific, military and industrial observatories, and potentially, energy facilities (thermal, wave, nuclear), Atmospheric water pumps, open ocean aquaculture and tourist observatories (see emerging activities below).</p> <p>Construction of seabed installations can cause smothering, sedimentation, turbidity, damaging and destroying seabed biota and habitats.</p> <p>Floating and stationary installations can generate pollution from discharges and spills, when active and once abandoned or deteriorating.</p> <p>Large scale installations could potentially disrupt ocean current flows patterns, species distributions and migratory routes.¹²¹</p> <p>Noise and other disturbances (acute during construction, chronic during operation) can harm species and habitats.</p>
<p>Military activities</p>	<p>Environmental impacts of military activities are often not publicly available due to secrecy associated with operations and technologies with activities generally unregulated or monitored.</p> <p>Impacts from military shipping, as above (e.g. pollution, debris, noise, invasive alien species, physical impacts).</p> <p>Acute noise from low frequency sonar, underwater explosions, firing of conventional weapons and discharge of ordnance.¹²²</p> <p>Chronic noise introduced in subsurface waters from submarines may cause more direct effects to deep sea species than shipping.</p> <p>Pollution, destruction and species depletion from missile tests, release of radioactive materials and other ultra-hazardous substances, replenishment of fuel at sea, scuttling of ships, munitions and armaments, and discharges from military aircraft (e.g. sonar buoys and other military equipment, fuel and other pollutants and waste materials).</p> <p>Military engagements during armed conflicts at sea could result in marine pollution from sunken vessels, discharge of munitions, etc.</p>
<p>Overflight</p>	<p>Aircraft emissions can indirectly pollute marine ABNJ as well as contribute to global climate change.</p> <p>Potentially harmful effects of noise from low altitude flights on high seas species and their habitats.</p> <p>Increasing global air traffic heightens the risk of pollution and contamination from plane wrecks.</p>

<i>Existing activities</i>	<i>Actual or potential impacts on marine biodiversity in ABNJ</i>
Archaeological/salvage activities	<p>Physical impacts including damage to/destruction and burial of seabed species and habitats.</p> <p>Sediment plumes, turbidity and the return of nutrient rich deep ocean water and seafloor sediments could affect water column as well as seabed species.</p> <p>Potential for release of toxic or harmful cargoes and fuel oil in sunken ships.</p>
<i>Emerging Activities</i>	<i>Anticipated or potential impacts on marine biodiversity in ABNJ</i>
Activities proposed to sequester CO ²	<p>Growing number of activities are being proposed to sequester CO₂ in the oceans to sell carbon offsets in the currently unregulated market.</p> <p>These include: i) ocean fertilization with micro-nutrients such as iron (to stimulate phytoplankton blooms to sequester CO₂ when the phytoplankton sinks to deeper waters below), ii) direct injection of CO₂ to the deep ocean, and iii) mechanical mixing of the water column through pumps to bring up nutrient rich deeper waters to stimulate phytoplankton blooms.¹²⁴ Additional proposals are likely to emerge in an effort to mitigate climate change.</p> <p>These proposals seek to deliberately alter ocean systems, so environmental effects are unavoidable and unpredictable.¹²⁵</p>

Emerging Activities	Anticipated or potential impacts on marine biodiversity in ABNJ
a) Ocean fertilisation	<p>The Parties to the London Convention/London Protocol have agreed to consider the legal and scientific issues of ocean fertilisation more fully with a view to its regulation, and confirmed the Scientists Statement of Concern that there is insufficient knowledge about the effectiveness of ocean fertilization and its potential environmental impacts to justify large-scale operations¹²⁶. Yet commercially operated pilot projects are underway and voluntary carbon offset credits are already being sold and donated.¹²⁷</p> <p>Iron-enrichment studies in equatorial and Antarctic waters indicate that even short-term iron enhancement can dramatically alter community structure in iron-limited pelagic ecosystems.¹²⁸</p> <p>Bacterial decay following the induced phytoplankton bloom will lower oxygen levels in the deep ocean, creating a possibility of hypoxic events (i.e. dead zones), and may favour growth of microbes that produce powerful greenhouse gases (e.g. nitrous oxide), that can affect clouds (DMS and isoprene) and that can destroy ozone (halogenated compounds).</p> <p>Additional photosynthetic activity could warm the surface waters (by about 1 W/m², not negligible) and potentially alter ocean circulation and ice cover.¹²⁹</p> <p>The types of phytoplankton expected to bloom and the potential impacts of any harmful algal blooms, is also a concern.¹³⁰</p>
b) Injection of CO ₂ into deep ocean waters	<p>Injection of CO₂ directly to the deep sea would change the chemistry (pH) of local ocean water¹³¹ and potentially accelerate acidification.</p> <p>Increased CO₂ levels are predicted to cause respiratory stress and decreased growth rates of species with carbonate-based skeletons and shells (e.g. coccolithophores, pteropods, corals, mollusks and crustaceans), many of which form the base of the food web.¹³²</p> <p>Alteration of community structure and biodiversity levels is predicted to effect substantially larger areas than the area of injection.¹³³</p> <p>Substantially more research is required to evaluate fully the potential local and regional impacts of CO₂ injection in the deep ocean.¹³⁴</p>
c) Water column mixing to sequester CO ₂	<ul style="list-style-type: none"> • Arrays of subsurface pumps could interfere with shipping, fishing and other water-column based activities, posing risks to human life and the environment. • While the deeper water would bring nutrients to the surface and algae might bloom, the deeper water may also release more CO₂ into the surface waters.¹³⁵ • Enhanced productivity could lower oxygen levels at the seabed and change the composition of seabed biota. • If done on a large scale as proposed, enhanced CO₂ production in the mid-water will increase problems with acidification.

<i>Emerging Activities</i>	<i>Anticipated or potential impacts on marine biodiversity in ABNJ</i>
<p>Exploration and exploitation of seabed mineral resources</p>	<p>Seabed mineral resources as defined in UNCLOS include all solid, liquid or gaseous mineral resources <i>in situ</i> in the Area or at or beneath the seabed.¹³⁶</p> <p>Often considered to be a technically impracticable, and hence some years away, activities related to seabed mineral resources are increasing.</p> <p>Hard (solid) mineral mining projects are already under development in Papua New Guinea, Micronesia and New Zealand.¹³⁷</p> <p>Substantial interest in expansion of oil and gas production in the international seabed “Area”¹³⁸</p> <p>Research on the exploitation of gas hydrates already underway in many countries.¹³⁹ Though gas hydrates occur mainly on continental margins, impacts of such activity may affect directly the high seas water column (and also neighbouring States) as well as indirectly exacerbate global warming.</p> <p>Relatively low productivity and slow growth rates of many deep sea species and slow currents in many deep-sea habitats mean they will be more sensitive to disturbance and recover more slowly than continental shelf species.¹⁴⁰</p> <p>Intense and chronic noise during prospecting to exploitation (from explosives and seismic air guns, surveys, engines, equipment) could kill species or alter behaviour patterns, but is little studied.</p>

<i>Anticipated or potential impacts on marine biodiversity in ABNJ</i>	
Emerging Activities	
a) Hard minerals	<p>Deep seabed mining for hard minerals such as polymetallic nodules, polymetallic sulphides and cobalt-bearing ferromanganese crusts could pose a severe threat to marine life in the direct vicinity as well as regionally. Some scientists suggest such mining shouldn't proceed until more information is available, consistent with a precautionary approach.¹⁴¹</p> <p>Predicted generic impacts of hard minerals mining include:</p> <ul style="list-style-type: none"> sediment plumes, turbidity, burial and oxygen-depletion directly affecting the area, causing habitat loss and potential extinction of endemic species; discharge or injection of nutrient-rich deep-ocean water, sea-floor sediments and heavy metals from mineral fragments could affect large areas of seabed and water column biota. For nodule mining, the effects could spread over 100s-1000s km² at any given moment, by altering light and productivity regimes, food-web structure, particle export and heavy-metal loading.¹⁴² <p>Impacts unique to each type of mining include:</p> <ul style="list-style-type: none"> Polymetallic nodules: the physical removal and destruction of wide swathes of seabed and all associated fauna (nodules provide the only hard substrate over much of abyssal seafloor, and provide habitat for distinct fauna).¹⁴³ Cobalt crusts: severe effects of blasting to separate cobalt-rich crusts from the substrate rock on surrounding deep sea species, habitats and ecosystems. Polymetallic sulphides: the proximity of polymetallic sulphides on extinct vents to living vents means that activities could: i) potentially smother, clog and contaminate nearby vent communities from drifting particles, ii) radically change habitat conditions (hard substrate to soft particle) and change hydrologic patterns that supply vent communities with essential nutrients and hot water; and iii) destroy or disrupt the transitional communities at extinct vent sites (e.g. cold water corals and sponges, little studied microbial communities).¹⁴⁴
b) Oil and gas	<p>Drill cuttings and drilling mud may pose a significant risk to marine life through physical smothering, organic enrichment and chemical contamination by hydrocarbons, heavy metals, chemicals and sulphides of the benthos near the cutting source, and may inhibit the settlement of marine invertebrate larvae.¹⁴⁵</p>

<i>Anticipated or potential impacts on marine biodiversity in ABNJ</i>	
<i>Emerging Activities</i>	
c) Methane hydrates	<p>Environmental impacts far from being fully understood, but are presently thought to have the potential to: Exacerbate effects of global warming as methane is 25 times more potent as a greenhouse gas than CO₂.</p> <p>Destabilise the seafloor (hydrates tend to act as cement in coarser-grained sediments), smothering benthic organisms and disturbing seafloor structures.</p> <p>Trigger subsea landslides, sediment movements, tsunamis and large uncontrolled releases of methane.</p> <p>Intensify ocean acidification through the oxidation of methane to carbon.¹⁴⁶</p> <p>Impacts may be comparable to the construction of artificial installations and ship discharges (accidental and operational) (see above).</p> <p>Floating nuclear power stations used to power offshore installations could result in radioactive and thermal discharges and emissions, with consequential harmful effects on deep sea and water column species and habitats.</p> <p>Impacts may be comparable to the construction of artificial installations (see above).</p> <p>In addition, the escape of non-indigenous or genetically modified species could cause genetic pollution and shifts in species composition.</p> <p>Impacts could include direct and indirect damage to vent chimneys, deep sea corals and other fragile deep sea habitats from 'souvenir collection', noise and light pollution, and indiscriminate scattering of ballast and debris on seabed.</p> <p>Potential for disturbance of sites important for scientific research, monitoring, biodiversity conservation, historical or archaeological importance.</p>
Energy facilities (e.g. wave, solar)	
Open ocean aquaculture	
Deep sea tourism (e.g. submersibles to vents, coral reefs, wrecks)	

Annex II: Key global agreements and UN bodies relevant to marine biodiversity in ABNJ

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
<p>United Nations Convention on the Law of the Sea (UNCLOS), 1982. in force 1994</p>	<p>Objectives:</p> <p>provides the legal order for the seas/oceans to promote peaceful uses; equitable and efficient utilization of resources; conservation of living resources; and study, protection and preservation of the marine environment.¹⁴⁷</p>	<p>UNCLOS provides the overarching legal framework for activities in ABNJ</p> <p>Divides the marine environment into zones, in ABNJ ‘high seas’ water column and seabed ‘Area’.</p> <p>Specific rights and general duties applicable to all zones, with specific regimes for each zone.</p> <p>In high seas, freedoms of the high seas have predominated (in other zones, resource/other rights better balanced with obligations to protect the marine environment).</p> <p>Environmental duties with respect to high seas are strong but very general: many activities lack detailed rules and regulations, and there are few provisions for specific conservation tools.</p> <p>General conservation duties are rigorous but outdated.¹⁴⁸ They were strengthened with respect to high migratory and straddling fish stocks through the UN Fish Stocks Agreement.</p> <p><i>At present, UNCLOS does not specifically address:</i></p> <p>Detailed requirements for conservation and sustainable use of the “components” of marine biodiversity¹⁴⁹, or of living resources (other than fish) of the Area¹⁵⁰;</p> <p>Mandate or detailed requirements for the protection of ‘vulnerable marine ecosystems’¹⁵¹;</p> <p>Specific requirements for EIA or monitoring of: intensifying or emerging uses of the seas;</p> <p>Modern conservation principles and tools such as the ecosystem approach, the precautionary approach, SEAs, representative networks of MPAs, or modern governance norms such as transparency, accountability and inclusiveness (see Table 1).</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>UNCLOS - High seas freedoms (art. 87):</p> <p>UNCLOS - Part XII general environmental duties (arts. 192- 196, 204-206)) include:</p>	<p>Include the freedom to fish, navigate, overfly, lay cables and pipelines, construct artificial islands and other installations, and conduct MSR.</p> <p>High seas freedoms are subject to conditions laid down by UNCLOS and other rules of international law;¹⁵² and</p> <p>Are to be exercised by all States with due regard for interests of other States.</p> <ul style="list-style-type: none"> • To protect and preserve the marine environment¹⁵³ • to prevent, reduce or control pollution from any source and to monitor risks or effects of pollution^{154 155} • to ensure that activities carried out under their jurisdiction or control do not cause transboundary damage by pollution to other states or to ABNJ¹⁵⁶ • to take measures to protect and preserve rare or fragile ecosystems and habitats of marine life¹⁵⁷ • to not transfer damage or hazards or transform one type of pollution into another¹⁵⁸ • to prevent introduction of new or alien species¹⁵⁹ • to prevent pollution resulting from the use of technologies under their jurisdiction or control¹⁶⁰ • to assess potential effects of planned activities under their jurisdiction or control.¹⁶¹

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>UNCLOS - Part XI principles for the International Seabed Area</p>	<p>The Area and its resources¹⁶² are the CHOM and all rights in the resources are vested in mankind as a whole:¹⁶³</p> <p>The International Seabed Authority (ISA) to act on behalf of mankind;¹⁶⁴</p> <p>Activities in the Area to be carried out for the benefit of mankind, taking into particular consideration the interests and needs of developing states;¹⁶⁵</p> <ul style="list-style-type: none"> • ISA to develop rules for, inter alia, prevention and control of marine pollution and interference with “ecological balance”; conservation of the natural resources of the Area and prevention of damage to the flora and fauna of the marine environment;¹⁶⁶ • The Council has the authority to “disapprove areas for exploitation where substantial evidence indicates the risk of serious harm to the marine environment.”¹⁶⁷
	<p>UNCLOS – State responsibility for activities related to mineral exploration and exploitation in the Area (art. 139, 209, 215)</p>	<p>States have significant responsibility for the acts of their nationals for mining-related activities in the Area:</p> <p>to adopt international rules to control pollution from activities in the Area, and national rules are to be no less effective than international rules.¹⁶⁸</p> <p>for ensuring conformity with international rules by state enterprises or by natural or juridical persons which possess the nationality of States Parties or are effectively controlled by them or their nationals.¹⁶⁹</p>
	<p>UNCLOS – General duty to cooperate (art. 197)</p>	<p>States are required to cooperate on a global, and as appropriate, on a regional basis,</p> <ul style="list-style-type: none"> – either directly or through the competent international organizations, – in formulating and elaborating international rules and recommended procedures for the protection and preservation of the marine environment – taking into account characteristic regional features.¹⁷⁰

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>UNCLOS – General flag State duties (arts. 91(1), 94, 211, 217-220)</p>	<ul style="list-style-type: none"> States to establish conditions for registration of ships and to effectively exercise jurisdiction and control over ships flying their flag.¹⁷¹ Flag States are required to ensure effective compliance with and enforcement of applicable international pollution control rules and standards, irrespective of where a violation occurs.¹⁷² Every State has the duty to adopt with respect to their nationals measures to conserve the living resources of the high seas.¹⁷³ <p>States are also to cooperate when their nationals exploit the same species or operate in the same area, by establishing, as appropriate, sub-regional or regional fisheries organizations.¹⁷⁴</p> <p>Minimum standards for conservation measures include the requirement to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield and to take into consideration the effects on species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.¹⁷⁵</p>
	<p>UNCLOS – Conservation duties (arts. 116 - 120)</p>	<p>States to adopt international rules and standards, with flag State rules to have at least the same effect.¹⁷⁶</p> <p>Measures shall include, inter alia, those designed to minimize to the fullest possible extent: pollution from vessels, in particular measures for preventing accidents and preventing intentional and unintentional discharges.¹⁷⁷</p>
	<p>UNCLOS – Pollution from vessels (arts. 194, 195, 196, 211)</p>	<p>States to adopt laws and regulations and take other measures to prevent and control pollution by dumping¹⁷⁸ and to ensure that dumping is not carried out without permission of competent state authorities¹⁷⁹</p> <p>Such rules are to minimize to the fullest possible extent the release of toxic, harmful or noxious substances¹⁸⁰</p>
	<p>UNCLOS – Dumping (arts. 194, 195, 196, 210)</p>	<ul style="list-style-type: none"> States to endeavour to establish global and regional rules¹⁸¹ and national laws to be no less effective than the global rules and standards¹⁸²

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>UNCLOS - Laying cables or pipelines (arts. 112-115)</p>	<p>States to have due regard to cables or pipelines already in position, and not prejudice repair access.¹⁸³</p> <p>States are to adopt laws for their nationals and flagged vessels making it punishable to break or injure a cable or pipeline other than to save lives or ships.¹⁸⁴</p>
	<p>UNCLOS - Marine scientific research (MSR)</p> <p>Part XII: arts. 192, 194, 195, 196. 197, 204-206;</p> <p>Part XIII on MSR; Part XI on The Area, especially 143, 145, 147.</p>	<p>General principles</p> <p>To be conducted exclusively for peaceful purposes and in compliance with regulations adopted for the protection and preservation of the marine environment.¹⁸⁵</p> <p>Cannot constitute the legal basis for any claim to any part of the marine environment or its resources.¹⁸⁶</p> <p>Cannot unjustifiably interfere with other legitimate sea uses, and shall be duly respected in return.¹⁸⁷</p> <p>To be transparent, thus States and international organizations are to publish information on proposed major programmes, their objectives, and their ultimate results.¹⁸⁸</p> <p>Research in the Area</p> <p>To be carried out for the benefit of mankind as a whole.¹⁸⁹</p> <p>To be carried out in conformity with the provisions of Part XI on marine environmental protection¹⁹⁰</p> <p>States parties are to promote international cooperation by, inter alia, ensuring that programmes are developed through the ISA for the benefit of developing States and effectively disseminating results of the research.¹⁹¹</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>UNCLOS - Constructing and operating artificial islands and installations (Part XII: arts. 192, 194, 195, 196, 197, 204 - 206, 194(d), 209 and 215,</p> <p>Part XI arts. 145 and 147.1-.2 for mining- related installations, 147.3 for non-mining related installations)¹⁹²</p> <p>UNCLOS – Military activities (arts. 95, 96, 236)</p>	<ul style="list-style-type: none"> • States are to take measures to minimize pollution to the fullest possible extent, <ul style="list-style-type: none"> – including through regulating the design, construction, equipment, operation and manning of such installations.¹⁹³ • Warships and ships on government non-commercial service have complete immunity from the jurisdiction of any other states.¹⁹⁴ • UNCLOS environmental provisions not applicable, but each State to ensure by appropriate measures not impairing operations or operational capabilities, that such vessels and aircraft act in a manner consistent with UNCLOS, so far as is reasonable and practicable.¹⁹⁵
	<p>UNCLOS – Archaeology (arts 303, 149))</p>	<p>All states have duty to protect objects of an archaeological and historical nature found at sea, and to cooperate in doing so;</p> <p>In the Area, such objects are to be preserved or disposed of for the benefit of mankind, with “particular regard to the state of origin”;</p> <p>Laws of salvage and other rules of admiralty not affected.</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
<p>Agreement for the Implementation of the Provisions of UNCLOS Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (referred to as the Fish Stocks Agreement or UNFSA), 1995, in force: 2001</p>	<p>The objective of UNFSA is to ensure the long-term conservation and sustainable use of straddling and highly migratory fish stocks through improving the implementation of the relevant provisions of UNCLOS.¹⁹⁶</p>	<p>Scope: Applies to straddling and highly migratory fish stocks but it does not apply to discrete high seas fish stocks or to catadromous or anadromous species (these latter two are generally covered by existing agreements).¹⁹⁷</p> <ul style="list-style-type: none"> – UNFSA applies primarily beyond national jurisdiction though some of its provisions also apply within areas under national jurisdiction to ensure compatibility. – The principles of the UNFSA (e.g. precautionary approach, ecosystem approach, duty to reduce impacts and protect biodiversity (see below) only apply to fishing activities, and no comparable statement of principles governs non-fishing activities. – Current state practice, including the UNGA resolution 61/105, indicate that the management principles of UNFSA are now accepted as applicable to discrete high seas stocks, but it still leaves a potential gap for these stocks with respect to inspection and enforcement regimes, and dispute resolution procedures. <p>Geographic gaps:</p> <ul style="list-style-type: none"> • Some regions of the high seas and many targeted species (mainly discrete high seas species in deep waters, but also sharks and other pelagic species) are not covered by RFMOs (see Table 2). • Additionally, some RFMOs have yet to incorporate the general principles of UNFSA into their management of highly migratory and straddling fish stocks (see Table 2). • Relatively low membership of UNFSA so that it does not include key fishing States such as China and Republic of Korea.

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	UNFSA - Duty to cooperate:	<ul style="list-style-type: none"> • Parties are required to cooperate either directly or through regional fisheries management organizations and arrangements (RFMOs).¹⁹⁸ • All States fishing in the area of an RFMO to either join the RFMO or to agree to observe the relevant conservation and management measures; otherwise they are not to permit their vessels to fish in the area. • Flag States and RFMOs to adopt monitoring, control and enforcement mechanisms.¹⁹⁹
	UNFSA - Conservation duties	<ul style="list-style-type: none"> • Fisheries management is to be based on precautionary and ecosystem approaches.²⁰⁰ <p>States are to, inter alia,:</p> <ul style="list-style-type: none"> – take into account the interdependence of stocks in conservation and management measures; – assess the impacts of fishing on target species and species belonging to the same ecosystem; – adopt, where necessary, conservation and management measures for species related to target stocks; – minimize pollution, waste, discharges, catch by lost or abandoned gear, bycatch, and impacts on associated and dependent species in particular endangered species; and – protect biodiversity in the marine environment.²⁰¹

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
Convention on Biological Diversity (CBD), 1992	<p>UNFSA – Flag State duties</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1) conservation of biological diversity; 2) the sustainable use of its components; and 3) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.²⁰² 	<ul style="list-style-type: none"> • Article 18 specifies flag state duties and responsibilities in detail to include: <ul style="list-style-type: none"> – to ensure that vessels flying its flag comply with subregional and regional conservation and management measures and that such vessels do not engage in any activity which undermines the effectiveness of such measures. – to authorize the use of vessels flying its flag for fishing on the high seas only where it is able to exercise effectively its responsibilities in respect of such vessels. – to control of such vessels by means of fishing licences, and to ensure effective monitoring, control and surveillance of such vessels, their fishing operations and related activities. <p>Jurisdictional scope: in ABNJ it applies only to processes and activities carried out under the control of Parties which may have an adverse impact on biodiversity.²⁰³</p> <p>Role of CBD: At COP8 in 2006, Parties to the CBD recognized that the Convention has a key role in supporting the work of the General Assembly with regard to MPAs beyond national jurisdiction, by focusing on provision of scientific and, as appropriate, technical information and advice relating to marine biological diversity, the application of the ecosystem approach and the precautionary approach, and in delivering the 2010 target to significantly reduce the current rate of biodiversity loss.²⁰⁴</p>

Key Global Agreements	Objective/Key rights and duties	Scope in relation to biodiversity in ABNJ
	<p>CBD – Conservation duties</p>	<p>Each Party to apply CBD provisions to processes and activities undertaken by its nationals (or other entities under its jurisdiction or control) that may adversely impact biodiversity in ABNJ.</p> <p>This includes the duty to</p> <ul style="list-style-type: none"> – identify and monitor processes and activities that may have significant adverse impacts on biodiversity ABNJ;²⁰⁵ – require ELA of proposed projects likely to have significant adverse impacts;²⁰⁶ and – promote consultation regarding activities under their jurisdiction or control that may significantly affect biodiversity of ABNJ²⁰⁷ <p>In contrast, in areas within national jurisdiction, the CBD provides detailed requirements for Parties to <i>inter alia</i>, establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity, protect ecosystems and habitats in situ, and regulate important biological resources with a view to ensuring their conservation and sustainable use.²⁰⁸</p> <ul style="list-style-type: none"> • Parties are to cooperate, as far as possible and appropriate, regarding the conservation and sustainable use of biodiversity in ABNJ through competent international organizations or directly by Parties.²⁰⁹ • Parties to the CBD are required to implement that convention consistently with the rights and obligations of States under the law of the sea,²¹⁰ except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.²¹¹
<p>Convention on the Conservation of Migratory Species of Wild Animals (CMS), 1979, in force 1983</p>	<p>Objectives:</p> <p>To protect migratory listed species (particularly those that migrate across or outside national jurisdictional boundaries), to conserve or restore habitat and to mitigate impacts that may impinge on their migration or survival.²¹²</p>	<p>Scope: CMS promotes collaborative actions amongst those States which exercise jurisdiction over any part of the range of the migratory species (i.e. 'Range States'), or a flag State whose vessels engage outside national jurisdictional limits that may impact on migratory species.</p> <p>In ABNJ, relevant listed marine migratory species include seabirds, whales, dolphins and turtles.</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>CMS – Conservation duties</p>	<p>Except under specific circumstances, Parties that are Range States of a migratory species listed in Appendix I shall prohibit the taking of such animals.²¹³</p> <p>Agreements developed under CMS are to consider, amongst other things, maintenance of a network of suitable habitats appropriately disposed in relation to the migration routes and procedures to eliminate illegal takings.²¹⁴</p> <p>Parties are to notify the Secretariat as to whether they qualify as a Range State for a species and to provide information on their flag vessels which are taking the migratory species concerned and, where possible, to provide future plans in respect of such taking.²¹⁵</p>
	<p>CMS – Reporting duties</p>	<p>Scope: CITES refers to marine ABNJ in the context of ‘introduction from the sea’ which provides for transportation into a State of listed species which are taken in the marine environment outside of the jurisdiction of any State.²¹⁶ Further clarification is currently being sought by Parties to CITES as to how provisions relating to ‘introduction from the sea’ should be interpreted and applied in practice.²¹⁷</p> <p>Among the marine listings are many species of cetaceans, turtles and corals. More recently Parties have listed marine species which have a commercial value.²¹⁸ Listings of commercially valuable marine species remain controversial, and CITES and FAO continue to work to define respective roles and capabilities.</p>
<p>Convention on Endangered Species of Wild Fauna and Flora (CITES), 1973, in force: 1975</p>	<p>Objectives</p> <p>To promote international cooperation to protect threatened and endangered wildlife species against over-exploitation from international trade.</p> <p>CITES Conservation duties</p>	<p>To prevent trade in endangered species listed in appendix 1;</p> <p>To regulate trade in species that might become endangered without such regulation that listed in appendix 2;</p> <p>To cooperate to control trade in species listed at the national level in appendix 3.</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
<p>International Whaling Convention (IWC), 1946, in force: 1948</p>	<p>Objectives</p> <p>To ensure proper and effective conservation and development of whale stocks.</p>	<p>Scope: Applies to factory ships, land stations, and whale catchers under the jurisdiction of Parties, and to all waters in which whaling is prosecuted. <i>The IWC applies only to commercial whaling, and does not regulate other activities that may impact on the health and status of whales.</i></p> <p>The International Whaling Commission is empowered to fix the limits of open and closed waters, including the designation of sanctuary areas, as well as prescribe seasons, catch and efforts limits, and prohibited methods for capture. A moratorium on whaling established by the Commission took effect in 1985/1986.²¹⁹</p> <p>Two large-scale high seas sanctuaries where commercial whaling is prohibited have been established in 1979 (Indian Ocean) and 1994 (Southern Ocean, expanding the 1938 Antarctic Sanctuary) and renewed since then, though not without some debate. Taking of whales for scientific purposes continues. Two proposed whale sanctuaries in the South Atlantic and South Pacific have failed to achieve the necessary 75% majority vote to be established.</p>
<p>International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), Annexes I, II, IV, V and VI,</p> <p>In force: Annex I & II Annex III: 1992 Annex IV: 2003 Annex V: 1988 Annex VI: 2005.</p>	<p>Objectives</p> <p>To achieve the complete elimination of intentional pollution of the marine environment by oil and other substances and the minimisation of their accidental discharge.</p>	<p>Scope: Extends to all ships entitled to fly the flag of a Party to the Convention and in all parts of the sea.²²⁰</p>

Key Global Agreements	Objective/Key rights and duties	Scope in relation to biodiversity in ABNJ
	<p>MARPOL annexes</p>	<p>Six technical annexes contain detailed regulations with respect to discharge, construction, design, equipment and operational standards to control pollution from: i) oil and oily wastes; ii) noxious liquid substances in bulk; iii) harmful substances carried by seas in packaged form; iv) sewage, v) garbage; and vi) air pollution.</p> <p>Despite improvement over the years, MARPOL continues to rely on a distance from land approach, in which discharges are less stringent beyond coastal waters other than in Special Areas where discharges of oil or other substances are more strictly controlled or prohibited.²²¹ This means that the high seas are the least protected part of the sea.²²²</p>
	<p>MARPOL special areas</p>	<p>The concept of Special Areas in MARPOL 73/78 recognises the existence of oceanographical, ecological and traffic conditions in a particular area of the sea which justify an almost complete prohibition on oil and other vessel discharges, except in very limited conditions. There are two Special Areas which include areas outside of national jurisdiction (Mediterranean and the Southern Ocean).²²³ Other high seas areas could be proposed or the vessel discharge standards provided under MARPOL could be made equally stringent across all maritime zones including ABNJ.</p>
<p>International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention), 2004, not yet in force</p>	<p>Objectives</p> <p>To prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments.</p>	<p>Scope: Under Article 2 <i>General Obligations</i> Parties undertake to give full and complete effect to the provisions of the Convention and the Annex in order to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. Art. 2(9) of the BWM Convention require Parties to cooperate to address threats and risks to biodiversity in ABNJ, providing a possible basis for action if needed to restrict ballast water exchange in certain areas in ABNJ.</p> <p>The specific requirements for ballast water management are contained in detailed regulations. The standard method of treatment for existing ships is <i>Ballast Water Exchange at sea</i>.²²⁴ This is to take place, wherever possible, at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, in all cases at least 50 nautical miles from the nearest land and in water at least 200 metres in depth. When these requirements cannot be met areas may be designated where ships can conduct ballast water exchange.</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
<p>Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, (London Convention), 1972, in force: 1975</p>	<p>Objective:</p> <p>To promote all practicable steps to prevent pollution of the sea by dumping of wastes and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.²²⁵</p>	<p>Scope: Applies to all maritime areas except the internal waters of a State.</p> <ul style="list-style-type: none"> • To be applied to vessels and aircraft registered in a Party's territory or flying its flag, loading in its territory or territorial sea the matter to be dumped, or vessels, aircraft and fixed or floating platforms under its jurisdiction believed to be engaged in dumping. • Parties can adopt other (stricter) measures to prevent dumping at sea.²²⁶ • <i>However, Parties are not required to adopt measures to control the activities of their nationals (private or public) that may affect ABNJ.</i> <p>London Convention - Definition of Dumping</p> <ul style="list-style-type: none"> • Disposition of material for purposes other than disposal when it is likely to cause harm is also considered "dumping" – Dumping" is defined as the deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures, as well as the deliberate disposal of these vessels or platforms themselves.²²⁷ – "Dumping" does not include the "placement of matter for a purpose other than the mere disposal thereof, provided that such placement is <i>not contrary to the aims of this Convention.</i>" Article 1(5)(b)(ii) <p>London Convention – Prohibited matter and duties</p> <ul style="list-style-type: none"> • Prohibits the dumping of certain hazardous materials, requires a prior special permit for the dumping of a number of other identified materials and a prior general permit for other wastes or matter. • Since its entry into force in 1975, Parties have agreed to phase out completely the dumping of radioactive waste, industrial waste (with some exceptions) and sewage sludge at sea. Incineration is also prohibited.²²⁸ • Dumping is prohibited, except for wastes on the so-called "reverse list", subject to EIA, waste assessment and permits. <p>London Convention - Duty to cooperate</p> <p>Parties are to cooperate in the development of procedures for the effective application of this Convention, particularly on the high seas, including procedures for the reporting of vessels and aircraft observed dumping in contravention of this Convention.²²⁹</p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
<p>Protocol to the London Convention, 1996, in force: 2006</p>	<p>Objectives: To eliminate pollution caused by dumping or incineration of wastes and other matter at sea, requires Parties to apply a precautionary approach, and encourages “polluter pays”²³⁰ implementation.</p>	<p>Scope: In 1996, the “London Protocol” was adopted to further modernize the Convention and, eventually, replace it.</p> <p>Under the Protocol, the precautionary approach is applied and all dumping is prohibited, with the exception of materials listed in Annex 1.²³¹</p> <p>These are: 1. Dredged material; 2. Sewage sludge; 3. Fish waste, or material resulting from industrial fish processing operations; 4. Vessels and platforms or other man-made structures at sea; 5. Inert, inorganic geological material; 6. Organic material of natural origin.</p> <p>Both the Convention and Protocol require Parties to issue permits for the dumping of wastes and other matter at sea.</p> <p>While the London Convention and Protocol do not apply to placement of matter for a purpose other than the mere disposal thereof, they do apply if such placement is contrary to the aims of the Convention/Protocol.²³²</p>
<p>Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement), 1993, in force: 2003</p>	<p>Objectives: To deter the practice of flagging or reflagging as a means to avoid compliance with international conservation and management measures for living marine resources and to reinforce the duties of flag States to exercise effectively jurisdiction and control over vessels flying their flag.</p>	<p>Scope: Applies to fishing vessels of Parties that are used or intended for fishing on the high seas²³³ but it does not apply to vessels fishing in areas where there are no RFMOs or agreed international conservation and management measures.</p> <ul style="list-style-type: none"> • The flag State must authorize its vessels to fish on the high seas, and it may only do so if it can effectively exercise its responsibilities under the Agreement. The Agreement relies primarily on flag state jurisdiction but also promotes international cooperation and provides for the ability of port States to investigate whether vessels in their ports have breached the Agreement.²³⁴ • FAO has established a High Seas Vessel Authorization Record to develop a comprehensive centralized data base on vessels authorized to fish on the high seas but due to the low number of parties to the Compliance Agreement, it is far from complete.

Key Global Agreements	Objective/Key rights and duties	Scope in relation to biodiversity in ABNJ
GOVERNANCE-FOCUSED AGREEMENTS	Mandate/objective	Scope in relation to biodiversity in ABNJ
UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), in force: 2001	Objective: In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being, each Party shall guarantee the rights of access to information, public participation in decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention. ²³⁵	<p>Scope: The Aarhus Convention sets forth environmental governance standards, primarily with respect to national institutions, but it also has a focus on participation of civil society in international agreements.</p> <ul style="list-style-type: none"> • The Parties are to promote the application of its principles to international environmental decision-making processes and within the framework of international organizations in matters relating to the environment. • At the second meeting in 2005, the Parties adopted the Almaty Guidelines on Promoting the Application of the Principles of the Aarhus Convention in International Forums. • The agreement may be acceded to by states outside of Europe, but this is not well publicized.
Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and its Protocol on Strategic Environmental Assessment (SEA Protocol), Espoo Convention in force: 1997 SEA Protocol: not yet in force.	The Espoo Convention seeks to ensure explicit consideration of environmental factors at an early stage in the decision-making process by applying EIA, at all appropriate administrative levels, as a necessary tool to improve the quality of information presented to decision makers so that environmentally sound decisions can be made paying careful attention to minimizing significant adverse impact, particularly in a transboundary context. ²³⁶	<p>Scope: The Espoo (EIA) Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across borders. This agreement may also be acceded to by states outside of Europe.</p> <p>Both the Espoo Convention and its SEA Protocol set forth standards for where the actions in one state would impact another state, <i>but not when such activities would impact areas outside the territory of another state (i.e. the High Seas).</i></p>

<i>Key Global Agreements</i>	<i>Objective/Key rights and duties</i>	<i>Scope in relation to biodiversity in ABNJ</i>
	<p>The objective of the SEA Protocol is to provide for a high level of protection of the environment, including health, by, inter alia,</p> <ul style="list-style-type: none"> (a) Ensuring that environmental, including health, considerations are thoroughly taken into account in the development of plans and programmes; (b) Contributing to the consideration of environmental, including health, concerns in the preparation of policies and legislation; (c) Establishing clear, transparent and effective procedures for SEA; (d) Providing for public participation in SEA; and (e) Integrating by these means environmental, including health, concerns into measures and instruments designed to further sustainable development. 	<p>Scope: The Kiev (SEA) Protocol, once in force, will require its Parties to evaluate the environmental consequences of their official draft plans and programmes. SEA is undertaken much earlier in the decision-making process than EIA -- it is therefore seen as a key tool for sustainable development. The Protocol also provides for extensive public participation in government decision-making in numerous development sectors.</p>

KEY UN AND OTHER BODIES	Scope in relation to biodiversity in ABNJ
<p>United Nations General Assembly (UNGA)</p>	<p>The United Nations General Assembly (UNGA) is the key political forum for member states to raise issues relevant to oceans and law of the sea. The UNGA adopts an annual resolution on oceans and law of the sea, which combined with the related resolution on sustainable fisheries, provide general policy guidance to a wide range of international institutions as well as states. These resolutions identify a broad range of marine and maritime issues, and include specific recommendations, calls and invitations to international institutions and states on actions to be taken.</p>
<p>United Nations Division on Oceans and Law of the Sea (DOALOS or the Division)</p>	<p>The Division serves as the secretariat of the United Nations Convention on the Law of the Sea and provides information, advice and assistance to States with a view to promoting a better understanding of the Convention and the related Agreements, their wider acceptance, uniform and consistent application and effective implementation. More specifically, the Division monitors developments in all relevant areas in order to report annually to the General Assembly on matters relating to the law of the sea and ocean affairs. Since 1999, the Division has serviced the meetings of the United Nations Open-ended informal consultative process on oceans and the law of the sea and since 2005 the meetings of the Ad Hoc Working Group to study issues related to the conservation and sustainable use of marine biological diversity in ABNJ. The Division also provides secretariat services to the Meetings of States Parties to the Convention and to the Commission on the Limits of the Continental Shelf.²³⁷</p>
<p>The UN Informal Consultative Process on Oceans and Law of the Sea (UNICPOLOS)</p>	<p>The UN Informal Consultative Process on Oceans and Law of the Sea (UNICPOLOS) was established in 2000 to provide a forum for informal discussions on pressing issues in the area of oceans affairs and to enhance coordination. Meeting annually, it enables states, international institutions, NGOs and other actors to explore specific problems, exchange views, and identify action which should be taken to address these problems. The reports of UNICPOLOS provide guidance and enrich the annual debates on oceans and law of the sea in the UN General Assembly, which also agrees on the focus and topics of forthcoming UNICPOLOS meetings. The protection of vulnerable marine ecosystems, including those in ABNJ, was discussed by UNICPOLOS in 2003 and 2004.</p>

KEY UN AND OTHER BODIES	Scope in relation to biodiversity in ABNJ
UN-Oceans	<p>UN-Oceans is an interagency coordinating mechanism within the UN system, which was established in 2003 by the UN General Assembly to bring together UN agencies and bodies, international financial institutions such as the World Bank and marine environmental convention secretariats dealing with oceans and coastal issues. It is jointly coordinated by DOALOS (administration) and the IOC (science).</p> <p>The functions of UN-Oceans include:</p> <ul style="list-style-type: none"> • Strengthening coordination and cooperation of United Nations activities related to oceans and coastal areas; • Identifying emerging issues, defining joint actions and establishing specific task teams to deal with these, as appropriate; • Promoting the integrated management of oceans at the international level; and • Promoting the coherence of United Nations system activities on oceans and coastal areas with the mandates of the General Assembly, and the priorities contained in the Millennium Development Goals, the Johannesburg Plan of Implementation and of governing bodies of all members of UN-OCEANS. <p>UN-Oceans is also empowered to pursue time-bound initiatives, with well-defined terms of reference, through <i>ad hoc</i> Task Forces. The CBD Secretariat and DOALOS are currently spearheading a UN-Oceans High Seas Task Force on biodiversity conservation in marine ABNJ. A more recent Task Force has been established on MPAs.</p> <p>UN-Oceans has no authority to review the performance of its members to assess their consistency with the environmental objectives of UNCLOS, the Millennium Development Goals, the Johannesburg Plan of Implementation, or other international legal instruments.</p>

KEY UN AND OTHER BODIES	Scope in relation to biodiversity in ABNJ
<p>The International Seabed Authority (ISA)²³⁸</p>	<p>The ISA is established under UNCLOS as the organisation through which States organise and control all activities for exploration for and exploitation of the resources of the Area,²³⁹ particularly with a view to administering mining activities.²⁴⁰ The term ‘resources’ only refers to non-living resources,²⁴¹ therefore the ISA does not deal with the conservation and management of living natural resources.</p> <p>The ISA is responsible for developing rules and procedures to protect and preserve the marine environment with respect to activities in the Area; for promoting and encouraging MSR and for the collection and dissemination of the results of such research and analysis, when available, with particular emphasis on research related to the environmental impact of activities in the Area.</p> <p>Activities in the Area must be carried out for the benefit of all mankind and the ISA must provide for the equitable sharing of financial and other economic benefits derived from activities in the Area.²⁴²</p> <p><i>The ISA is apparently not empowered</i> to adopt rules to protect the marine environment with respect to the conduct of MSR, biological prospecting, the laying of cables and pipelines, or the construction of seabed installations when these are not related to seabed mining, even though all such activities may have an impact on biodiversity.</p>
<p>UN Food and Agriculture Organization (FAO), Committee on Fisheries (COFI)</p>	<p>COFI is the global inter-governmental forum where major international fisheries and aquaculture problems and issues are examined and recommendations developed for governments, regional fishery bodies, NGOs, fishworkers, FAO and international community. In its work, the Committee supplements rather than supplants other organizations working in the field of fisheries and aquaculture (FAO COFI website).</p> <p>COFI is to review the programmes of work of FAO in the field of fisheries and aquaculture and their implementation, and to conduct periodic reviews of fishery and aquaculture problems of an international character and appraise such problems and their possible solutions with a view to concerted action by nations, by FAO, inter-governmental bodies and the civil society.</p> <p>The Committee can also review specific fisheries-related matters at the request of Members or the United Nations General Assembly</p> <p>COFI has also been used as a forum to negotiate global agreements and non-binding instruments such as the FAO Code of Conduct for Responsible Fisheries, the FAO Compliance Agreement (see below) and four International Plans of Action (IPOAs). The IPOAs call for the development of national action plans for reducing overcapacity, conserving sharks, reducing seabird by-catch and combating IUU fishing. COFI meetings regularly assess implementation of these agreements, and the FAO assists in their implementation inter alia, through data gathering and assistance to developing countries.</p>

KEY UN AND OTHER BODIES	Scope in relation to biodiversity in ABNJ
<p>International Maritime Organization (IMO)</p>	<p>IMO provides the machinery for co-operation in the field of governmental regulation and practices affecting shipping engaged in international trade, in order to encourage the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships. IMO can also consider any matters concerning the effect of shipping on the marine environment that are referred to it by any organ or specialized agency of the United Nations.²⁴³ Its mandate is: to ensure “safe, secure and efficient shipping on clean oceans.”</p> <p>IMO Rules and standards are widely recognized as minimum standards applicable to all States vessels both within and beyond national jurisdiction. IMO is considered the competent authority to establish special protective measures in defined areas where shipping presents a risk. These apply uniformly to all ships (non-discriminatory) and include routing and discharge restrictions and reporting requirements.²⁴⁴</p> <p>IMO has also developed the concept of Particularly Sensitive Sea Areas as “an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities.” Under the Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, one or more governments may seek protective measures for discrete areas both within and beyond the limits of the territorial sea which are vulnerable to the impacts of international shipping activities. PSSAs are not based on any treaty level instrument, but provide a lens to review potential protective measures available through existing IMO instruments or within IMO’s competence to adopt.</p>
<p>Intergovernmental Oceanographic Commission (IOC)</p>	<p>The IOC of the UN Economic, Social and Cultural Organization (UNESCO) focuses on “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 coordination of an operational global ocean observing system and the dissemination of ocean data and information.” IOC also provides international leadership for education and training programmes and technical assistance essential for systematic observations of the global ocean and its coastal zone and related research. Much of IOC’s work has clear relevance to enhancing conservation and sustainable use of open ocean and deep seabed areas.</p>
<p>United Nations Environment Programme (UNEP)</p>	<p>UNEP has supported and coordinated activities and major international programmes for the conservation and sustainable use of the oceans, including Regional Seas Conventions and Action Plans covering 140 countries, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), and programmes of work on Small Island Developing States (SIDS) and coral reefs. UNEP also cooperates closely with various other ocean-related initiatives, such as the Global Invasive Species Programme (GISP) and the Marine Mammal Action Plan. In recent years, UNEP, in collaboration with various partners, has prepared a number of reports and products to inform governments and stakeholders and to raise awareness of the need to conserve and sustainably manage and use marine biodiversity in areas beyond national jurisdiction.</p>

Annex III: List of acronyms and abbreviations used in the report

ASMA(s)	Antarctic Specially Managed Area(s)
ASPA(s)	Antarctic Specially Protected Area(s)
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CEP	Commission for Environmental Protection
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CoML	Census of Marine Life
COP	Conference of the Parties
DOALOS	(United Nations Office of Legal Affairs) Division for Ocean Affairs and the Law of the Sea
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
GFCM	General Fisheries Commission of the Mediterranean
HSMPA(s)	High seas marine protected area(s)
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Seas
IGO	Intergovernmental Organisation
IMO	International Maritime Organization
IOTC	Indian Ocean Tuna Commission
ISA	International Seabed Authority
IUCN	International Union for the Conservation of Nature

IUU	Illegal, unreported and unregulated (fishing)
IWC	International Whaling Commission
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978
MPA(s)	Marine protected area(s)
NAFO	Northwest Atlantic Fisheries Organisation
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	Northeast Atlantic Fisheries Commission
NPAFC	North Pacific Anadromous Fish Commission
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
RFMO	Regional Fisheries Management Organisation
SBT	Southern Bluefin Tuna
SEAFO	Southeast Atlantic Fisheries Organisation
SIOFA	South Indian Ocean Fisheries Agreement
SPAMI(s)	Specially Protected Area(s) of Mediterranean Importance
SPREP	Pacific Regional Environment Programme
UNGA	United Nations General Assembly
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stocks Agreement
UNICPOLOS	United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea
WCPFC	Western and Central Pacific Fisheries Commission

Endnotes

- ¹ Although giving the ISA a clear mandate relating to the “marine environment,” neither UNCLOS nor the Agreement Relating to the Implementation of Part XI of the Convention (the “Part XI Agreement”) specifically discuss any particular responsibility relating to benthic marine life of the Area. Hence, it is not clear who is responsible for these resources, or which elements of UNCLOS’s regime shall apply to them, other than in some areas with respect to fishing for sedentary species (see Table 2).
- ² UNGA Res. 61/105, among other things, calls upon flag States and RFMOs to take action to prevent significant adverse impacts to vulnerable marine ecosystem from high seas bottom fishing, but this still leaves them vulnerable to other human activities such as mining, cable-laying, construction of seabed installations, marine scientific research and bioprospecting.
- ³ “Norms” are standards or practices that may not yet be codified in formal law, but that nevertheless influence the behaviour of individuals, corporations, or governments. In the realm of environmental governance, emerging norms include increasing expectations for transparency and public participation in decision-making. Environmental Governance Today, WORLD RESOURCES 2002–2004, Chapter 2. The Espoo Convention and its Protocol and Aarhus Conventions (described in Annex II) arguably reflect modern norms of conservation and governance with respect to environmental impact assessments (EIAs) and strategic environmental assessments (SEAs,) and public participation and access to information, respectively.
- ⁴ Growing pressure for measurable results through programs such as the Millennium Development Goals has increased emphasis on performance assessment. Additionally, an analytically based understanding the strengths and weaknesses of the current system is necessary to developing effective plans for improvement. UNEP Global Environmental Governance project, <http://www.environmental-governance.com/foundations/analysis.php>.
- ⁵ Equitable use of natural resources implies that use by one state must take account of the needs of other states (intragenerational equity) and of future generations (intergenerational equity). These aspects are considered by many to be fundamental components of the general principle of sustainable development. See, Philippe Sands, 1995. Principles of international environmental law, vol. 1, Frameworks, standards and implementation. Manchester University Press, Manchester and New York, pp. 198-200.
- ⁶ The ocean regions in ABNJ that have some mechanisms for biodiversity conservation are the Northeast Atlantic, the Mediterranean and the Southern Ocean, as described in Table 2.
- ⁷ The FAO Compliance Agreement is only applicable where “international conservation and management measures are in place”; hence is arguably not applicable in areas where there are no RFMOs, or no agreed interim measures. Article 1.
- ⁸ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 231-232.
- ⁹ This is evidenced by discussions during the negotiations for a new RFMO in the South Pacific, aimed at managing discrete, non-migratory species. A call for interim measures prohibiting bottom trawling was initially blocked by several of the negotiating states. See “Northern Nations Block South Pacific Fish Conservation”, available at <http://www.ens-news.com/ens/nov2006/2006-11-13-03.asp>. However, at the third meeting of the negotiations, parties agreed on extensive interim measures conforming to General Assembly Resolutions on destructive fishing practices. The negotiations of the RFMO are creating interesting practice. See www.southpacificrfmo.org for more information.
- ¹⁰ IMO now encourages flag States to participate in a voluntary performance audit, but does not require it.
- ¹¹ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, p. 254. Under the Annexes of MARPOL 73/78, States “undertake to ensure” that their ports are provided with facilities for the reception of wastes, but are not directly required to provide them.
- ¹² Art. 2(9) of the BWM Convention requires contracting Parties to cooperate to address threats and risks to biodiversity in ABNJ, but does not contain a specific procedure for the designation of ballast water control areas if needed to restrict BW exchange in certain areas in ABNJ.
- ¹³ See Annex II.
- ¹⁴ UNCLOS Article 218.1.
- ¹⁵ IMO’s Revised Guidelines for the Designation of Particularly Sensitive Sea Areas provide some scope for protection of ABNJ vulnerable to the impacts of shipping but there are no provisions yet for recognition or endorsement of representative networks of MPAs. IMO Assembly Resolution A.982(24), adopted 2005.
- ¹⁶ UNCLOS, articles 1(1)(4), 192, London Convention article I and III 1(b(ii)).
- ¹⁷ Statement of Concern from the Scientific Groups to the London Convention and London Protocol, issued 22 June 2007, IMO Briefing 25/2007 13 July 2007. “The Scientific Groups of the London Convention and the London Protocol take the view that knowledge about the effectiveness and potential environmental impacts of ocean iron fertilisation currently is insufficient to justify large-scale operations”.
- ¹⁸ The *London Convention* encourages States Parties to develop a cooperative system of monitoring compliance with the Convention’s provisions on the high seas but there has been no practical implementation of this article as yet, Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, p. 271.
- ¹⁹ UNCLOS Part XIII does not cover all types of science conducted in the marine environment.
- ²⁰ In addition to its mandate to encourage MSR in the Area, the ISA has jurisdiction to regulate the impacts of MSR on mining activities in the Area. What remains unclear is whether the ISA has jurisdiction to regulate the impacts of (non-mining) MSR on the environment and biodiversity.
- ²¹ MARPOL 73/78 Art. 3(3).
- ²² UNCLOS art. 246.5(b)
- ²³ Philome`ne A. Verlaan, ‘Experimental Activities that Intentionally Perturb the Marine Environment: Implications for the marine environmental protection and marine scientific provisions of the 1982 United Nations Convention on the Law of the Sea’ (2007) 31 *Marine Policy* 210-216.
- ²⁴ MARPOL 73/78 Art. 3(3).
- ²⁵ Philome`ne A. Verlaan, ‘Experimental Activities that Intentionally Perturb the Marine Environment: Implications for the marine environmental protection and marine scientific provisions of the 1982 United Nations Convention on the Law of the Sea’ (2007) 31 *Marine Policy* 210-216.
- ²⁶ Bioprospecting and MSR are often carried out by the same institutions to decrease cost of research expedition.
- ²⁷ UNCLOS art. 147.3 only provides that other activities in the marine environment shall be conducted with ‘reasonable regard for activities in the Area’, but says nothing about environmental protection.
- ²⁸ UNCLOS art. 114, 115.
- ²⁹ Lee A. Kimball, 2005. *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction CBD Technical Series No. 19 at 9.9*
- ³⁰ Art. 236 provides that provisions in UNCLOS regarding the protection and preservation of the marine environment do not apply to warships, naval auxiliary, other vessels or aircraft owned used for government non-commercial service, but each State is to ensure that such vessels or aircraft act in a manner consistent with the Convention, so far as is reasonable and practicable, and do not impair operations or operational capabilities
- ³¹ The London Convention and Protocol also regulate dumping from aircraft.
- ³² The Kyoto Protocol does not include international aviation emissions in its targets, but calls on Parties to pursue limitations or reductions by working through ICAO.
- ³³ Under UNCLOS art. 208.3, State regulation shall be no less effective than international regulation.
- ³⁴ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, at 406. NEAFC applies to fisheries in the Northeast Atlantic sector. The Arctic states have agreed on a non-binding Arctic Environmental Protection Strategy
- ³⁵ CCAMLR applies to the Southern Ocean surrounding Antarctica south of 60°S latitude and between that latitude and the Antarctic Convergence
- ³⁶ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, at 209. The catch documentations scheme adopted by CCAMLR in 2000 has attracted the participation of nonmember states.
- ³⁷ Antarctic Treaty art. 4. Some Antarctic treaty claimants with offshore maritime zones do not necessarily agree that ABNJ begin at the continent’s edge. (e.g. Australia, New Zealand, France and Norway).

³⁸ Antarctic Treaty Preamble

³⁹ Antarctic convergence is included in the remit of CCAMLR, but not the ATCM.

⁴⁰ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 427

⁴¹ Environment Protocol to the Antarctic Treaty, Preamble, art. 2 and 3. Five annexes set forth detailed provisions for: i) Environmental impact assessment; ii) waste disposal and waste management; iii) prevention of marine pollution; and iv) area protection and management.⁴¹ Annex IV specifically provides for the establishment of a system of Antarctic Specially Protected Areas and Antarctic Specially Managed Areas, including in the marine environment.

⁴² As part of its comprehensive regime, the Environment Protocol to the Antarctic Treaty requires environmental impact assessments for all proposed activities, such as scientific research, tourism and related logistic support. If the activity is deemed likely to have more than a minor or transitory impact, a comprehensive environmental evaluation is subject to review by a meeting of the Parties before the activity may proceed (article 5).

⁴³ Willock A. and Lack, M. 2006. Follow the Leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and Traffic International, at 19.

⁴⁴ ICCAT covers the Atlantic Ocean, including adjacent seas. In November 2004 ICCAT adopted a binding measure on shark finning but it does not appear that any regulations regarding targeted shark fisheries are in place.

⁴⁵ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 187. Warner notes that there appears to be a disjunction between ICCAT's failure to adopt a cooperative compliance and enforcement scheme among its members and its rigorous measures against fishing by non-party vessels

⁴⁶ NASCO applies to salmon stocks which migrate beyond areas of fisheries jurisdiction of coastal States of the Atlantic Ocean north of 36°N latitude throughout their migratory range.

⁴⁷ Evelyne Meltzer. 2005. Global Overview of Straddling and Highly Migratory Fish Stocks: Maps and Charts: Maps and Charts Detailing RFMO Coverage and Implementation. *International Journal of Marine and Coastal Law*, volume 20, numbers 3-4. NASCO has adopted resolutions to incorporate precautionary approach and to apply it to habitat protection and bycatch reduction.

⁴⁸ NEAFC covers roughly the North East Atlantic Ocean and Arctic Oceans including the Reykjanes-Azores area, and the Irminger Sea (Banana Hole), but not the Barents Sea Loophole.

⁴⁹ Willock and Lack, Follow the Leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and Traffic International at 19.

⁵⁰ Willock and Lack, Follow the Leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and Traffic International at 19.

⁵¹ Evelyne Meltzer. 2005. Global Overview of Straddling and Highly Migratory Fish Stocks: Maps and Charts: Maps and Charts Detailing RFMO Coverage and Implementation. *International Journal of Marine and Coastal Law*, vol. 20, nos. 3-4.

⁵² Amendments to the 1982 Convention have been adopted in 2004 and 2006 by the NEAFC Commission. Contracting parties have agreed to use the "new" Convention on a provisional basis, pending ratification.

⁵³ WGFN 2007-06, 22/03/2007 para. 4.4.1,

⁵⁴ The 'OSPAR Maritime Area' includes a substantial high seas area adjacent to national EEZs and includes the seabed.

⁵⁵ OSPAR Convention, Preamble

⁵⁶ The three annexes to the OSPAR Convention elaborate on obligations to prevent and eliminate pollution from land-based sources (annex I), dumping or incineration (annex II), or from offshore sources (annex III), one annex details requirements for assessment of the quality of the marine environment (annex IV), and one, adopted after the main instrument, in 1998, on ecosystems and biodiversity (Annex V) details obligations for protecting ecosystems and conserving biodiversity. (See Erik Jaap Molenaar and Harm Dotinga (in press), The Mid-Atlantic Ridge: A case study on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction).

⁵⁷ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 412

⁵⁸ NAFO proposed convention, article II.

⁵⁹ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 171

⁶⁰ Erik Jaap Molenaar, 2005. Addressing Regulatory Gaps in High Seas Fisheries. *International Journal of Marine and Coastal Law*, volume 20, numbers 3 - 4, at 538.

⁶¹ Anna Willock and Lack, 2007, Follow the Leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and Traffic International at 19

⁶² In September 2005, the North Atlantic Fisheries Organization (NAFO) adopted a resolution modeled after the IATTC and ICCAT measures, banning shark finning in all NAFO-managed fisheries, and mandated the collection of information on shark catches. Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto-J., Mandelman, J., Mangel, J., Petersen, S., Piovano, S., Thomson, N., Dalzell, P., Donoso, M., Goren, M., Werner, T. 2007. *Shark Depredation and Unwanted Bycatch in Pelagic Longline Fisheries: Industry Practices and Attitudes, and Shark Avoidance Strategies*. Western Pacific Regional Fishery Management Council, Honolulu, USA.

⁶³ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 173

⁶⁴ The Cartagena Convention applies to the Gulf of Mexico, the Caribbean Sea and the adjacent areas of the Atlantic Ocean south of 30° north latitude and within 200 nautical miles of the Atlantic coasts of states parties to the convention.

⁶⁵ Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region; adopted 1983, in force 1986, Protocol concerning Protected Areas and Wildlife (SPAW); adopted 1990; (not yet in force) Protocol on the prevention, reduction and control of land-based sources and activities; adopted 1999 (not yet in force).

⁶⁶ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 391

⁶⁷ WCAFC covers extensive areas of the Western Central Atlantic, including areas both within and beyond national jurisdiction. FAO area 31 and part of 41. http://www.fao.org/ifi/body/rfb/wcafc/wcafc_mandate.htm FAO, 1973 Constitution Resolution 4/61 FAO Council, Sixty-first Session, November 1973

⁶⁸ SEAFO covers the Southeast Atlantic Ocean beyond the limits of national jurisdiction. Northern limits of area under review to reflect inclusion of Cabinda, Angola

⁶⁹ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 173

⁷⁰ Evelyne Meltzer. 2005. Global Overview of Straddling and Highly Migratory Fish Stocks: Maps and Charts: Maps and Charts Detailing RFMO Coverage and Implementation. *International Journal of Marine and Coastal Law*, volume 20, numbers 3-4.

⁷¹ The Indian Ocean north of the Antarctic convergence. FAO areas 51 and 57, and adjacent seas, north of the Antarctic Convergence. There is an overlap on the western boundary with WCPFC. In 1999, it was agreed that area of competence be extended to 20°. Evelyne Meltzer. 2005. Global Overview of Straddling and Highly Migratory Fish Stocks: Maps and Charts: Maps and Charts Detailing RFMO Coverage and Implementation. *International Journal of Marine and Coastal Law*, volume 20, numbers 3-4.

⁷² Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 201

⁷³ Southern Indian Ocean between Africa and Australia. Covers all species save tuna and selected tuna-like species.

⁷⁴ In 1997 the General Fisheries Council for the Mediterranean was transformed from an advisory body to the General Fisheries Commission for Mediterranean which has regulatory functions.

- ⁷⁶ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 190
- ⁷⁷ Anna Willock and Lack, 2007, Follow the Leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and Traffic International.
- ⁷⁸ In 1995, the Barcelona Convention was revised to incorporate principles contained in the Rio Declaration and Agenda 21.
- ⁷⁹ The obligations are elaborated in a series of associated protocols addressing: i) dumping from ships and aircraft and incineration at sea; ii) cooperation in combating pollution emergencies; iii) pollution from land-based sources; iv) specially protected areas (1982) revised in 1995 to cover specially protected areas and biodiversity; v) pollution from exploration and exploitation of the continental shelf; and pollution from transboundary movements of hazardous wastes. For full list and access to protocols, see <http://www.unep.ch/regionalseas/main/hconlist.html>.
- ⁸⁰ Convention contains a commitment to invite non-parties to the protocol and international organizations to cooperate and implement an implementation of the protocol and to adopt appropriate measures consistent with international law to ensure that no one engages in activity contrary to the principles or purposes of the protocol. Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, at 386.
- ⁸¹ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 386 citing Barcelona Convention, article 3(d).
- ⁸² The Central Bering Sea Convention applies to pollock resources in the high seas area (donut hole) of the Bering Sea.
- ⁸³ NPAFC covers the waters of the North Pacific Ocean and its adjacent seas, north of 33 degrees North Latitude beyond 200-miles zones of the coastal States.
- ⁸⁴ The NPAFC Convention prohibits directed fishing for anadromous fish (seven species of salmon) in the Convention Area; requires minimization to the maximum extent of the incidental taking of anadromous fish and prohibits the retention of incidental catch http://www.npafc.org/new/about_convention.html.
- ⁸⁵ The scope of application of the Northeast Pacific Convention comprises the maritime areas of the Northeast Pacific, defined in conformity with the United Nations Convention on the Law of the Sea.
- ⁸⁶ NWPOFA applies to the high seas areas of the North Western Pacific Ocean defined, for the purposes of this document, as those occurring within FAO statistical area No. 61, including all such areas and marine species other than: (i) those already covered by existing international fisheries management instruments, including bilateral agreements and regional fisheries management organizations or arrangements, and (ii) closed high seas areas that are surrounded by the EEZ of a single country.
- ⁸⁷ The Western and Central Pacific Fisheries Commission (WCPFC) area extends from the south coast of Australia south along 141° E to its intersection with 55°S then east along 55° S to its intersection 150°E; then south along 150° E to its intersection with 60°S; then east along 60°S to its intersection with 130°W; then north along 130° W to its intersection with 4°S; then west along 4°S to its intersection with 150° W; then north along 150°W.
- ⁸⁸ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney
- ⁸⁹ Noumea Convention, article 2(a)(ii) applies to the maritime areas out to 200 nm from contracting Parties and also areas beyond national jurisdiction that are completely enclosed by 200-nautical miles exclusive economic zones (EEZ), i.e. high seas enclaves.
- ⁹⁰ Noumea Convention article 5.1.
- ⁹¹ The Convention builds on UNCLOS by setting forth obligations with respect to pollution from various sources, mining and coastal erosion, the protection of wild flora and fauna and the establishment of specially protected areas, environmental impact assessments, scientific and technical cooperation and other assistance. Noumea Convention articles 5-18. Protocol for the Prevention of Pollution of the South Pacific Region by Dumping; adopted 1986, in force 1990. Protocol Concerning Co-operation in Combating Pollution Emergencies in the South Pacific Region; adopted 1986, in force 1990
- ⁹² IATTC applies to large area of eastern Pacific Ocean off the coasts of North, Central and South America. The Antigua Convention extends southern boundary and more precisely defines the area to be along the 50° N parallel from the coast of North America to the intersection with 150° W, and from that line to the intersection with 50° S and from that line to its intersection with the coast of South America (extends the notional IATTC boundaries by 10° both N and S).
- ⁹³ In 2003 the member states adopted the Convention for the Strengthening of the IATTC Convention, which was designed to implement the provisions of the UN Fish Stocks Agreement and the Code of Conduct.
- ⁹⁴ In June 2005, the Inter-American Tropical Tuna Commission (IATTC) adopted a Resolution on the Conservation of Sharks Caught in Association with Fisheries in the Eastern Pacific Ocean, which bans shark finning and mandates the collection of information and advice on stock status of shark species. The resolution also requires members to comply with the FAO International Plan of Action on sharks and take measures to require that their fishers fully utilize any retained sharks. Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto-J., Mandelman, J., Mangel, J., Petersen, S., Piovano, S., Thomson, N., Dalzell, P., Donoso, M., Goren, M., Werner, T. 2007. *Shark Depredation and Unwanted Bycatch in Pelagic Longline Fisheries: Industry Practices and Attitudes, and Shark Avoidance Strategies*. Western Pacific Regional Fishery Management Council, Honolulu, USA.
- ⁹⁵ The Lima Convention applies to the sea area and the coastal zone of the South-East Pacific within the 200-mile maritime area of the High Contracting Parties and, beyond that area, the high seas up to a distance within which pollution of the high seas may affect that area
- ⁹⁶ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 403
- ⁹⁷ The western boundary of the proposed South Pacific RFMO should abut the eastern boundary of the proposed Agreement area to be established under the Southern Indian Ocean Fisheries Agreement; the southern boundary of the proposed South Pacific RFMO should abut the northern boundary of the Agreement area of the Commission for the Conservation of the Antarctic Living Marine Resources (CCAMLR); the eastern boundary of the proposed South Pacific RFMO should abut the outer limit of the maritime jurisdictions of South American states; the northern boundary of the proposed South Pacific RFMO should not be delineated until the meeting had discussed fishery resources to be managed, the regulation of high seas enclaves within the proposed area and had received further scientific and technical information".
- ⁹⁸ <http://www.southpacificrfmo.org/>
- ⁹⁹ CCSBT covers entire range for southern bluefin tuna, in all oceans and the spawning ground south of Java, Indonesia.
- ¹⁰⁰ CCSBT Commission has established an Ecologically Related Species Working Group charged with reducing bycatch and evaluating effects on associated species.
- ¹⁰¹ Anna Willock and Lack, 2006. Follow the Leader: Learning from experience and best practice in regional fisheries management organizations. WWF International and Traffic International at 38. Provisions for NGO participation at the CCSBT include a very long lead time for applications to attend, the possibility of applications being rejected its on the basis of an objection by single-member and the possibility of excluding observers from a session of the commission at request for single-member.
- ¹⁰² UN Sec. General Report A/60/63/Add.1 para. 132.
- ¹⁰³ Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto-J., Mandelman, J., Mangel, J., Petersen, S., Piovano, S., Thomson, N., Dalzell, P., Donoso, M., Goren, M., Werner, T. 2007. *Shark Depredation and Unwanted Bycatch in Pelagic Longline Fisheries: Industry Practices and Attitudes, and Shark Avoidance Strategies*. Western Pacific Regional Fishery Management Council, Honolulu, USA.
- ¹⁰⁴ Quantifying the loss of marine resources due to "ghost fishing" is difficult to estimate, but several studies on static gears have shown it to be about 10% of the target population. http://www.oceansatlas.com/world_fisheries_and_aquaculture/html/issues/ecosys/gearloss/default.htm
- ¹⁰⁵ Greenpeace, 2006. Where have all the tuna gone? How tuna ranching and pirate fishing are wiping out bluefin tuna in the Mediterranean Sea. <http://oceans.greenpeace.org/en/documents-reports/tuna-gone>
- ¹⁰⁶ UN Sec. Gen. Report A/60/63/Add.1 para. 147-148.
- ¹⁰⁷ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, page 236, figure 6.
- ¹⁰⁸ Accidental oil spills and chronic discharges can have significant impacts on open ocean oceanographic features where biological activity is concentrated, such as in convergence zones, gyres and eddies, near sea-ice fronts and in polynyas (areas of open water surrounded by sea ice). Impacts can be particularly significant in high latitudes, where low temperatures impede the microbial breakdown of toxic hydrocarbons. A/60/63/Add.1 para. 156.

¹⁰⁹ http://www.usatoday.com/money/world/2006-08-03-cargo-problems-usat_x.htm (quotes the figure of 2,000 to 10,000 containers fall off ships each year, less than 1% of the number of containers sent by sea annually but shipping containers are 20 feet to 40 feet long and 8 feet high, and such information is not monitored in a coordinated manner).

¹¹⁰ Some unscrupulous firms with ships hired to transport hazardous cargoes may instead dump them at sea to save transport costs.

¹¹¹ Steve Raaymakers, 2003. 'Maritime Transport and High Seas Governance – Regulation, Risks and the IMO Regime', Paper presented at the International Workshop on Governance of High Seas Biodiversity Conservation: Cairns, Australia, 17-20 June 2003,

¹¹² Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney, p. 248.

¹¹³ John Vidal, 2007. CO2 output from shipping twice as much as airlines.
<http://www.guardian.co.uk/environment/2007/mar/03/travelsenvironmentalimpact.transportintheuk>

¹¹⁴ UN Sec. Gen report A/59/62/Add.1 para. 234

¹¹⁵ UN Sec. Gen report A/59/62/Add.1 para. 234

¹¹⁶ UN Sec. Gen report A/59/62/Add.1 para. 234

¹¹⁷ Hjalmar Thiel has reported that cable-laying has interfered with a long-term research site in the North East Atlantic, underscoring the need for the anticipatory designation of "Unique Science Priority Areas", See Hjalmar Thiel, 2003. Science as Stakeholder: a proposal for Unique Science Priority Areas, Ocean Challenge, Vol. 12, No1 (special European Issue).

¹¹⁸ Many potentially adverse side effects had been observed from iron fertilization experiments but none of the experiments conducted so far has been designed to quantify or assess these effects. Mark Lawrence, Max Planck Institute for Chemistry, Department of Atmospheric Chemistry, Mainz, Germany, personal communication, following Woods Hole Symposium on Ocean Iron Fertilization, September 25-27, 2007.

¹¹⁹ UN Sec. Gen report 2005. A/ 60/63/Add.1, para. 174.

¹²⁰ S. Arico and C. Salpin, *Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects* (Yokohama: United Nations University Institute of Advanced Studies, 2005), para. 3.3.

¹²¹ Faber, Maunsell and Metoc Plc, 2007 Scottish Marine Renewables Strategic Environmental Assessment (Sea) Non-Technical Summary.
http://www.seaenergyscotland.net/SEA_Public_Environmental_Report.htm

¹²² Necropsies on toothed whales that mass stranded after being in the vicinity of sonar-using military vessels and seismic vessels have shown ruptured earbones, haemorrhages in fatty tissues of the head, and air bubbles in the lungs and brain. Other observed effects include stranding and displacement from habitat, tissue damage and mortality.

¹²³ Sec. Gen report 2005. A/60/63/Add.1, para. 161-164.

¹²⁴ <http://www.atmocean.com/sequestration.htm> and <http://www.atmocean.com/faqs.htm>. According to the company website, a single pump consists of a buoy, flexible tube, valve assembly, cable between the buoy and cylinder, and solar panel to power. To prevent interference with shipping, they intend to deploy these buoys only outside of the 200 mile territorial limit. "When fully deployed, our 3m diameter by 200m deep pumps spaced 2 km apart will be positioned across 80% of the world's oceans". (emphasis added)

¹²⁵ John J. Cullen. "Intended and Unintended Consequences of Large-Scale Ocean Fertilization, presentation at Woods Hole Symposium "Exploring Ocean Iron Fertilization: the scientific, economic, legal and political basis" Woods Hole Oceanographic Institution, September 25-27, 2007.

¹²⁶ Statement of Concern from the Scientific Groups to the London Convention and London Protocol, issued 22 June 2007, IMO Briefing 25/2007 13 July 2007.

¹²⁷ See e.g. <http://www.planktos.com/PlanktosStore> which offers to help you green your carbon footprint by replanting trees, cleansing skies, and reviving starving seas.

¹²⁸ Koslow and Smith: K. H. Coale and others, 1996. "A massive phytoplankton bloom induced by an ecosystem-scale iron fertilization experiment in the equatorial Pacific Ocean", *Nature*, vol. 383, No. 6600); G. C. Rollwagen Bollens and M. R. Landry, 2000. "Biological response to iron fertilization in the eastern equatorial Pacific (IronEx II). II. Mesozooplankton abundance, biomass, depth distribution and grazing", *Marine Ecology Progress Series*, vol. 201.

¹²⁹ Mark Lawrence, Max Planck Institute for Chemistry, Department of Atmospheric Chemistry, Mainz, Germany, personal communication; and Andy Watson, 2007, "Some (other) possible climate and biogeochemical effects of iron fertilization" presentation at Woods Hole Symposium on Ocean Iron Fertilization, September 25-27, 2007.

¹³⁰ Statement of Concern from the Scientific Groups to the London Convention and London Protocol, issued 22 June 2007, IMO Briefing 25/2007 13 July 2007.

¹³¹ IPCC Working Group III., 2005 Carbon Dioxide Capture and Storage: summary for policymakers and technical summary. Cambridge University Press. Available at: <http://www.ipcc.ch/>

¹³² See e.g., Scott Doney, 2006. "The Dangers of Ocean Acidification", *Scientific American*, March 2006, pp.58-65; http://www.eur-oceans.eu/WP9/Factsheets/FS7/FS7_webprint.pdf

¹³³ UN Sec. Gen report A/60/63/Add.1, para. 163.

¹³⁴ UN Sec. Gen report A/60/63/Add.1, para. 163.

¹³⁵ Saving Gaia, *New Scientist*, 29 September 2007, page 4.

¹³⁶ UNCLOS art. 133(a).

¹³⁷ Anna Stablum 12 Sep 2007 (Reuters) ANALYSIS-Seabed miners face delays, environmental woes.
<http://www.planetark.org/dailynewsstory.cfm/newsid/44293/story.htm>

¹³⁸ UN Sec. Gen report A/60/63/Add.1, para. 166.

¹³⁹ Hydrate is a crystalline solid consisting of gas molecules, usually methane, each surrounded by a cage of water molecules. Japan, US, Canada, India, EU and others are developing the technology needed for commercial production of methane from hydrate by 2015 and for understanding the role of hydrate deposits in global climate change and seafloor stability. Edith Allison, (Office of Natural Gas and Petroleum Technology, United States Department of Energy), Presentation to 4th UN Informal Consultative Process on Oceans and Law of the Sea. June 2004.

¹⁴⁰ UN Sec. Gen report A/60/63/Add.1., para 142.

¹⁴¹ Anna Stablum 12 Sep 2007 (Reuters) ANALYSIS-Seabed miners face delays, environmental woes.
<http://www.planetark.org/dailynewsstory.cfm/newsid/44293/story.htm>.

¹⁴² Jochen Halfar and Rodney M. Fujita, Danger of Deep-Sea Mining threat to marine ecosystems, 2 SCIENCE VOL 316 18 MAY 2007, 987.

¹⁴³ UN Sec. Gen report A/60/63/Add.1, para. 168-171. The predicted impacts of nodule mining have been judged to be so large that a number of studies have recommended the abandonment of manganese mining efforts to avoid a large-scale and long-term risk to Pacific ecosystems and fisheries. See e.g. Jochen Halfar and Rodney M. Fujita, Danger of Deep-Sea Mining threat to marine ecosystems, 2 SCIENCE VOL 316 18 MAY 2007, 987, citing Tusch Research Group, in *Proceedings International Symposium Kiel Institute of International Law*, R. Wolfrum, Ed., Kiel, Germany, 17 to 20 May 1989 (Duncker & Humblot, Berlin, 1990).

¹⁴⁴ Jochen Halfar and Rodney M. Fujita, Danger of Deep-Sea Mining threat to marine ecosystems, 2 SCIENCE VOL 316 18 MAY 2007, 987, Anna Stablum 12 Sep 2007 (Reuters) ANALYSIS-Seabed miners face delays, environmental woes. <http://www.planetark.org/dailynewsstory.cfm/newsid/44293/story.htm>.

¹⁴⁵ UN Sec. Gen report A/60/63/Add.1, para. 166.

¹⁴⁶ Carole Durussel, 2007. Methane Hydrates: Implications and management, Presentation prepared for IUCN Global Marine Program.

¹⁴⁷ UNCLOS preamble, paragraph 4.

¹⁴⁸ Michael W. Lodge and Satya N. Nandan, 2005. "Some Suggestions Towards Better Implementation of the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995, the international Journal of marine and coastal law, vol. 20, no. 3-4, pp. 345 -380.

¹⁴⁹ The Convention on Biological Diversity expressly excludes "components" of biodiversity from its scope with respect to areas beyond national jurisdiction, while acknowledging that the fundamental requirement for the conservation of biological diversity is the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings (preamble). What the CBD provides instead is for parties to regulate processes and activities carried out under their jurisdiction or control and for cooperation with other parties, directly or through competent international (CBD

- Article 4(b) and 5) (see Annex II). An indicative list of categories of biodiversity ‘components’ relevant for identification and monitoring purposes is set down in CBD Annex I.
- ¹⁵⁰ Although giving the ISA a clear mandate relating to the “marine environment,” neither UNCLOS nor the Agreement Relating to the Implementation of Part XI of the Convention (the “Part XI Agreement”) specifically discuss any particular responsibility relating to benthic marine life of the Area. Hence, it is not clear who is responsible for these resources, or which elements of UNCLOS’s regime shall apply to them, other than in some areas with respect to fishing for sedentary species (see Table 2).
- ¹⁵¹ UNGA res. 61/105 calls upon flag States and RFMOs to take action to prevent significant adverse impacts to vulnerable marine ecosystems, but there are no comparable provisions regarding the protection from other activities.
- ¹⁵² UNCLOS Article 87(1)
- ¹⁵³ UNCLOS Article 192
- ¹⁵⁴ See UNCLOS Article 194(1), noting also the duty to minimize to the fullest possible extent pollution and accidents (art. 194(3)) and the duty not to transfer damage or hazards or transform one type of pollution into another (art. 195). The duty to monitor risks or effects of pollution is provided for in UNCLOS art. 204.
- ¹⁵⁵ UNCLOS indirectly incorporates by reference treaties on dumping and pollution from ships, thus making rules adopted by the bodies authorized to regulate these issues binding on all parties to UNCLOS, even if not parties to the directly applicable agreement. UNCLOS arts. 211(2) and 210(6).
- ¹⁵⁶ In taking measures to prevent and control pollution, States to refrain from “unjustifiable interference” with legitimate activities of other States. UNCLOS art 194(2).
- ¹⁵⁷ Specifically UNCLOS art.194(5) states that “The measures taken in accordance with this Part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. The placement of this paragraph in the article dealing primarily with measures to control pollution has led to confusion, with some suggesting that this paragraph of Part XII only applies in the context of pollution control and not the full range of human activities. Others point out that the text specifically refers to “measures “taken in accordance with this Part”, which is Part XII, containing the more general obligation to protect and preserve the marine environment in article 192.
- ¹⁵⁸ UNCLOS art. 195.
- ¹⁵⁹ UNCLOS art. 196
- ¹⁶⁰ UNCLOS art. 196
- ¹⁶¹ UNCLOS art. 206. This duty is to be implemented if the State has reasonable grounds for believing that such activities may cause substantial pollution of or significant and harmful changes to the marine environment.
- ¹⁶² Resources” means all solid, liquid or gaseous mineral resources *in situ* in the Area. Resources when recovered are referred to as minerals (UNCLOS art. 133).
- ¹⁶³ UNCLOS art. 136.
- ¹⁶⁴ UNCLOS art. 137.
- ¹⁶⁵ UNCLOS art. 140.1.
- ¹⁶⁶ UNCLOS art. 145.
- ¹⁶⁷ UNCLOS art. 162(2)(x). Under the Polymetallic Nodules Regulations, the ISA has the right to take measures to ensure compliance with its provisions, including the right to suspend operations likely to cause substantial harm to the marine environment of the Area.
- ¹⁶⁸ UNCLOS art. 209.
- ¹⁶⁹ UNCLOS arts. 139 and 215.
- ¹⁷⁰ UNCLOS art. 197.
- ¹⁷¹ In accordance with UNCLOS art. 91(1) “*there must exist a genuine link between the state and the ship.*” See also Articles 94, 211, 217-220.
- ¹⁷² UNCLOS art. 217 (1)-(8). See Warner at 91.
- ¹⁷³ UNCLOS art. 117.
- ¹⁷⁴ UNCLOS art. 118.
- ¹⁷⁵ UNCLOS art. 119.
- ¹⁷⁶ UNCLOS art. 211(1)-(2).
- ¹⁷⁷ UNCLOS art. 194.3(b).
- ¹⁷⁸ UNCLOS art. 210.
- ¹⁷⁹ UNCLOS art. 210.3.
- ¹⁸⁰ UNCLOS art. 194.3(a).
- ¹⁸¹ UNCLOS art. 210.4.
- ¹⁸² UNCLOS art. 210.6.
- ¹⁸³ UNCLOS arts. 112, 79.5.
- ¹⁸⁴ UNCLOS art. 113, see also art. 114 & 115 regarding indemnity and costs of repairs.
- ¹⁸⁵ UNCLOS art. 240.(d)).
- ¹⁸⁶ UNCLOS art. 241.
- ¹⁸⁷ UNCLOS art. 240.(c).
- ¹⁸⁸ UNCLOS art. 244(1)
- ¹⁸⁹ UNCLOS art. 143 (1)
- ¹⁹⁰ UNCLOS arts. 143(1), 256
- ¹⁹¹ UNCLOS art. 143(3)
- ¹⁹² UNCLOS art. 147.3 only provides that other activities in the marine environment shall be conducted with ‘reasonable regard for activities in the Area’.
- ¹⁹³ UNCLOS art. 194.3(d)
- ¹⁹⁴ UNCLOS arts. 95, 96
- ¹⁹⁵ UNCLOS art 236
- ¹⁹⁶ UNFSA art. 2
- ¹⁹⁷ With respect to discrete high seas fish stocks, the UNGA has called for States to apply the general principles of the UNFSA, but this does not include the specific provisions of the agreement (e.g. flag state and RFMO duties, enforcement, dispute resolution). A/RES/61/105, adopted 6 December 2006, paragraph 19;
- ¹⁹⁸ UNFSA art. 8.
- ¹⁹⁹ Lee A. Kimball, 2005. *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction CBD Technical Series No. 19*, at 11; UNFSA also contains detailed provisions for compliance and enforcement, including: at sea boarding and inspection arrangements, port State inspection and controls, (Articles 19-23); special requirements for developing States (Article 24); and peaceful settlement of disputes (arts. 27-32).
- ²⁰⁰ UNFSA art. 6 and Annex II, and art. 5.
- ²⁰¹ UNFSA art. 5 (d)- 5(g)
- ²⁰² UNFSA art. 1.
- ²⁰³ CBD art. 4, under national jurisdiction there is an additional application of the provision to components of biological diversity.
- ²⁰⁴ CBD COP Decision VIII/24. Protected areas paragraph 42
- ²⁰⁵ CBD See art. 7(c). With respect to threats to genetic resources in the seabed beyond national jurisdiction, COP8 also requested Parties and urged other States to take measures to urgently manage activities and processes under their jurisdiction and control which may have significant adverse impacts and to report on measures taken as part of the national CBD reporting process.
- ²⁰⁶ CBD art. 14.(a)
- ²⁰⁷ CBD art. 14 (c)
- ²⁰⁸ CBD, art. 8.
- ²⁰⁹ CBD art. 5.

- ²¹⁰ CBD art. 22(2) The CBD recognises that UNCLOS provides the legal framework for regulation of activities in marine ABNJ and the law of the sea prevails in instances where the implementation of CBD conflicts with it.
- ²¹¹ CBD art. 22.1. Article 22(1) provides an important exception to the requirements for consistency with the law of the sea where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity. Thus in the case of serious damage or threat to biological diversity, the CBD prevails. See also Alan Boyle, Further Development of the 1982 Convention on the Law of the Sea: Mechanisms for Change, in The Law of the Sea: progress and prospects, edited by David Freestone, Richard Barnes, and David Ong, Oxford University Press, 2006. at 57.
- ²¹² Under the framework agreement of CMS, Agreements (e.g. Agreement on the Conservation of Albatrosses and Petrels) and Memorandum of Understanding (e.g. MOU concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa) are also developed. See <http://www.cms.int/> for further information.
- ²¹³ CMS art. III(5).
- ²¹⁴ CMS art. V(5)(f) and (k).
- ²¹⁵ CMS art. VI(2).
- ²¹⁶ Defined in CITES Article I(e), further outlined in Article III(5) in relation to Appendix I species and in Article IV(6)-(7) for Appendix II species.
- ²¹⁷ See Introduction from the sea, CoP14, Doc. 33, Fourteenth meeting of the Conference of the Parties, The Hague (Netherlands), 3-15 June 2007. <http://www.cites.org/eng/cop/14/doc/E14-33.pdf>.
- ²¹⁸ Fish species with a commercial value were listed at COP12 in 2002 including basking (*Cetorhinus maximus*) and whale sharks (*Rhincodon typus*) and all seahorse species (*Hippocampus spp.*); at COP13 in 2004 the Humphead Wrasse (*Cheilinus undulatus*) and the Great White Shark (*Carcharodon carcharias*) were listed and at COP14 in 2007 the European Eel (*Anguilla anguilla*) was listed. See <http://www.cites.org/eng/app/index.shtml>
- ²¹⁹ Lee A. Kimball, 2005. *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction CBD Technical Series No. 19*. at 13.
- ²²⁰ MARPOL 73/78 Preamble. Article 3(1). MARPOL does not extend to ships owned or operated by a Party and used only on government non-commercial service (e.g. warships, research vessels), though Parties are to ensure that such ships act consistently so far as is reasonable and practicable. (MARPOL 73/78 Art. 3(3)).
- ²²¹ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 237.
- ²²² Raaymakers, Steve, 'Maritime Transport and High Seas Governance –Regulation, Risk and the IMO Regime,' Paper presented at the International Workshop on Governance of High Seas Biodiversity Conservation: Cairns, Australia, 17-20 June 2003.
- ²²³ Lee A. Kimball, 2005. *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction CBD Technical Series No. 19* at 16.
- ²²⁴ Ballast Water Convention, regulations B3 and B4.
- ²²⁵ London Convention, art. 1.
- ²²⁶ London Convention art. VII.5.
- ²²⁷ London Convention, art. III.
- ²²⁸ Robin Warner, 2006. Protecting the Diversity of the Depths: Strengthening the International Law Framework, Thesis Submitted for the Degree of Doctor of Philosophy, University of Sydney at 256, citing Olave Schram Stokke, 'Beyond Dumping? The Effectiveness of the London Convention (1998) Yearbook of International Cooperation on Environment and Development 39 & 41 and Molenaar, Erik Jaap, 'The 1996 Protocol to the London Convention' (1997) 12(3) International Journal of Marine and Coastal Law, 397, 397.
- ²²⁹ London Convention art. VII.3.
- ²³⁰ Lee A. Kimball, 2005. *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction CBD Technical Series No. 19* at 16.
- ²³¹ London Protocol, art. 4.
- ²³² London Convention Article III (1) (b)(ii), London Protocol article 1.4.2(2) and (3).
- ²³³ FAO Compliance Agreement Article II.
- ²³⁴ FAO Compliance Agreement Article V FAO Compliance Agreement.
- ²³⁵ Aarhus Convention, art. 1.
- ²³⁶ Espoo Convention Preamble and art. 2
- ²³⁷ Source: http://www.un.org/Depts/los/doalos_activities/about_doalos.htm
- ²³⁸ Other institutions created under UNCLOS include the International Tribunal for the Law of the Sea and the Commission on the Limits of the Continental Shelf.
- ²³⁹ UNCLOS art. 1, para. 1 (3).
- ²⁴⁰ UNCLOS art. 157.
- ²⁴¹ UNCLOS art. 133: 'resources' means all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules'
- ²⁴² UNCLOS art. 140.
- ²⁴³ IMO Convention article 1(a) and (d)
- ²⁴⁴ Lee A. Kimball, 2005. *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction CBD Technical Series No. 19* at 15.

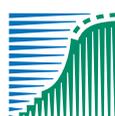


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