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Item 3.1.4 of the provisional agenda**

REPORT OF THE EXPERT WORKSHOP ON SCIENTIFIC AND TECHNICAL ASPECTS RELEVANT TO ENVIRONMENTAL IMPACT ASSESSMENT IN MARINE AREAS BEYOND NATIONAL JURISDICTION

INTRODUCTION

1. At its ninth meeting, the Conference of the Parties (COP) to the Convention on Biological Diversity, in decision IX/20, invited Parties, other Governments and relevant organizations, including in the context of 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, to cooperate in further developing scientific and technical guidance for the implementation of environmental impact assessments and strategic environmental assessments for activities and processes under their jurisdiction and control which may have significant adverse impacts on marine biodiversity beyond national jurisdiction, taking into consideration the work of Food and Agriculture Organization of the United Nations, the International Maritime Organization, and other relevant organizations, with a view to ensuring such activities are regulated in such a way that they do not compromise ecosystem integrity, and to report to the Conference of the Parties at its tenth meeting on progress made in that regard.

2. In the same decision, the Conference of the Parties also noted the need for capacity-building for developing countries, in order to fully implement existing provisions of environmental impact assessment, as well as the challenges and difficulties in carrying out environmental impact assessment in areas beyond national jurisdiction.

* Already circulated as UNEP/CBD/EW-BCS&EIAMA/1/2.

** UNEP/CBD/SBSTTA/14/1.

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3. For the purpose of the above-mentioned paragraphs, taking into account the relevant provisions of the United Nations Convention on the Law of the Sea and the Convention on Biological Diversity, the Conference of the Parties decided to convene an expert workshop, including experts from different relevant organizations, with balanced regional and sectoral representation, to discuss scientific and technical aspects relevant to environmental impact assessment in areas beyond national jurisdiction with a view to contributing to the development of such scientific and technical guidance, building on ongoing relevant sectoral, regional and national environmental impact assessment efforts.

4. Pursuant to this request, the Executive Secretary convened, with financial support from the European Commission, an Expert Workshop on Scientific and Technical Aspects relevant to Environmental Impact Assessment in Marine Areas beyond National Jurisdiction. The workshop was co-hosted by the Government of Philippines and the GEF/UNDP Regional Programme on Partnership in Environmental Management for the Seas of East Asia (PEMSEA), and held at the Pan Pacific Manila Hotel in Manila, the Republic of the Philippines, from 18 to 20 November 2009.

5. The Workshop was attended by experts from Brazil, Canada, Congo, Cuba, Japan, Madagascar, Nigeria, Peru, Philippines, Samoa, Thailand, and United Kingdom. The experts were selected among experts nominated by Governments, in consultation with the Bureau of the Conference of the Parties. Experts/observers from the following United Nations bodies, specialized agencies, and other bodies attended: the United Nations Division of Ocean Affairs and the Law of the Sea (UN-DOALOS), the Food and Agriculture Organization of the United Nations (FAO), the International Seabed Authority (ISA), ASEAN Centre for Biodiversity, OSPAR Commission, IUCN Global Marine Programme, IUCN Commission on Environmental Law, and the Global Forum on Oceans, Coasts and Islands. The list of participants is attached as annex I.

ITEM 1. OPENING OF THE MEETING

6. The Workshop was opened at 9 a.m. on Wednesday, 18 November 2009, by Mr. Antonio C. Manila, Assistant Director of the Protected Areas and Wildlife Bureau, Department of Environment and Natural Resources of the Republic of the Philippines. He welcomed the participants, highly recognizing the importance of issues that the workshop was addressing. He expressed his appreciation to the workshop participants for their broad spectrum of scientific and technical expertise that would enrich the workshop discussion. He emphasized the value of biodiversity to the Philippines, a megabiodiverse country, and briefed the workshop participants on the current efforts by the Philippines regarding biodiversity conservation in marine areas, including marine protected areas.

7. Mr. Raphael P.M. Lotilla, Executive Director of the PEMSEA Resource Facility, also welcomed the participants. He highlighted that PEMSEA shares the goal of sustainable ocean and coastal development, including marine biodiversity conservation, with the Convention on Biological Diversity. He then invited all the participants to join the East Asian Seas (EAS) Congress 2009, to be held in Manila, from 23 to 27 November 2009. He appreciated the on-going collaboration with the CBD Secretariat, in particular regarding integrated marine and coastal area management, and looked forward to a continued cooperation.

8. Ms. Jihyun Lee, of the CBD Secretariat, delivered the statement of the Executive Secretary of the CBD, Dr. Ahmed Djoghlaif. In his statement, Dr. Djoghlaif welcomed the participants and expressed his appreciation to the Government of the Philippines and PEMSEA for co-hosting, and the European Commission for providing financial resources for the workshop. He informed the participants that the CBD Secretariat and PEMSEA would sign an MOU during the EAS Congress 2009 to formalize their existing cooperation, which would further enhance the implementation of the Jakarta Mandates and the programme of work on marine and coastal biodiversity. He highlighted the background and objectives of the workshop, which would build on CBD's existing efforts on impact assessment, including CBD voluntary guidelines on biodiversity-inclusive environmental impact assessment and the draft guidance on biodiversity-inclusive strategic environmental assessment in decision VIII/28. He then invited all to join hands with the Secretariat in celebrating the 2010 International Year of Biodiversity, together with

Parties, CBD partners and other global communities. He wished participants productive workshop deliberations and a successful outcome.

ITEM 2. ELECTION OF THE CHAIRPERSON, ADOPTION OF THE AGENDA AND ORGANIZATION OF WORK

9. The Workshop elected Mr. Gil Jacinto (Philippines) as the Workshop Chairperson.
10. The Workshop adopted the provisional agenda as contained in the document UNEP/CBD/EW-EIAMA/1.
11. The Workshop adopted the proposed organization of work as contained in annex II to document UNEP/CBD/EW-EIAMA/1/Add.1.

ITEM 3. REVIEW OF THE SCIENTIFIC AND TECHNICAL ASPECTS OF SECTORAL, REGIONAL AND NATIONAL ENVIRONMENTAL IMPACT ASSESSMENT EFFORTS OF RELEVANCE TO MARINE AREAS BEYOND NATIONAL JURISDICTION

12. In its consideration of this item, the Workshop had before it :
 - (a) CBD voluntary guidelines on biodiversity-inclusive environmental impact assessment (endorsed by the COP to the CBD in its decision VIII/28), as contained in the CBD Technical Series No. 26;
 - (b) CBD Draft Guidance on biodiversity-inclusive strategic environmental assessment (endorsed by the Conference of the Parties to the CBD in its decision VIII/28), as contained in the CBD Technical Series No. 26;
 - (c) Information documents (UNEP/CBD/EW-EIAMA/1/INF/1 and UNEP/CBD/EW-EIAMA/1/INF/1/Add.1) prepared by the Executive Secretary based on the results of the background study; and
 - (d) Submissions by Parties, other Governments and relevant organizations in response to the above-mentioned notification dated 10 August 2009 (ref. no. 2009-091).

13. Workshop participants shared, through open discussions, the scientific and technical aspects of their global, regional and national experience in environmental impact assessments and strategic environmental impact assessments, relevant to marine areas beyond national jurisdiction, to guide the output of this Workshop.

14. For its deliberation, the Workshop focused on identifying the following:
 - (a) Key scientific and technical elements that should be considered in developing scientific and technical guidance for the implementation of environmental impact assessments and strategic environmental assessments for activities and processes under their jurisdiction and control which may have significant adverse impacts on marine biodiversity in areas beyond national jurisdiction (ABNJ); and
 - (b) Gaps in CBD voluntary guidelines on biodiversity-inclusive environmental impact assessment and CBD draft guidance on biodiversity-inclusive strategic environmental assessment, and special considerations in their application, with respect to the scientific and technical elements identified above.

ITEM 4. CONTRIBUTION TO THE DEVELOPMENT OF SCIENTIFIC AND TECHNICAL GUIDANCE FOR ENVIRONMENTAL IMPACT ASSESSMENT IN MARINE AREAS BEYOND NATIONAL JURISDICTION

15. For the consideration of this item, based on the above-mentioned documents (CBD Technical Series No. 26, UNEP/CBD/ EW-EIAMA/1/INF/1 and UNEP/CBD/ EW-EIAMA/1/INF/1/Add.1) and the submissions, and building on deliberations of the Workshop under agenda item 3, participants were

divided into two break-out groups to consider specific suggestions for addressing identified gaps in CBD voluntary guidelines on biodiversity-inclusive environmental impact assessment and CBD draft guidance on biodiversity-inclusive strategic environmental assessment, with respect to the identified scientific and technical elements that should be considered in developing scientific and technical guidance for the implementation of environmental impact assessments and strategic environmental assessments for activities and processes under their jurisdiction and control which may have significant adverse impacts on marine biodiversity beyond national jurisdiction.

(a) *Group 1.* Addressing gaps and special considerations in the CBD voluntary guidelines on biodiversity-inclusive environmental impact assessment with respect to identified scientific and technical elements for impact assessment in marine areas beyond national jurisdiction; and

(b) *Group 2.* Addressing gaps and special considerations in the CBD draft guidance on biodiversity-inclusive strategic environmental assessment with respect to identified scientific and technical elements for impact assessment in marine areas beyond national jurisdiction.

16. The results of the break-out group sessions were submitted for consideration to the Workshop Plenary. The results were refined and finalized by the Plenary for incorporation into the Workshop report as annexes II, III and IV.

ITEM 5. OTHER MATTERS

17. No other matters were discussed.

ITEM 6. ADOPTION OF THE REPORT

18. Participants considered and adopted the report of the Workshop on the basis of a draft report prepared and presented by the Workshop Chairperson with some changes.

ITEM 7. CLOSURE OF THE MEETING

19. The Workshop was closed at 5 p.m. on Friday, 20 November 2009.

Annex I

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*Annex II***CONCLUSIONS ON ENVIRONMENTAL IMPACT ASSESSMENTS IN MARINE AREAS
BEYOND NATIONAL JURISDICTION****Preamble****Approach to review of *Voluntary Guidelines* for EIA**

1. The CBD voluntary guidelines on biodiversity-inclusive impact assessment, as contained in decision VIII/28, were developed to give biodiversity considerations greater prominence in EIAs. They were developed to function generically, independent of the specific type of ecosystem or activity for which an EIA was to be conducted. Derived from a review of EIA practices at national and regional scales, however, the guidelines are almost exclusively based on EIAs conducted for terrestrial, freshwater and coastal ecosystems. Ocean areas beyond national jurisdiction have a number of ecological, governance and practical (operational) differences from those types of ecosystems. This review considered the implications of those differences for EIA in general. It also noted that these differences and their implications mean that for many, but not all of the guidelines, there are special considerations that should be taken into account in their application in areas beyond national jurisdiction (ABNJ).

2. This report summarizes the differences and their implications. Then, for each guideline, either it is noted that there are no special consideration when the guideline is applied to ocean areas beyond national jurisdiction, or else commentary is provided on the nature of the special considerations that need to be taken into account. Consistent with the mandate of CBD to provide scientific and technical advice on biodiversity beyond national jurisdiction, when these considerations are ecological, further guidance is provided on the nature of the adaptation of the Guideline that would be appropriate in ocean areas beyond national jurisdiction. When the differences are related to governance or EIA process, the special considerations are reported for the attention of those relevant agencies with authority to advise and act on governance issues in ocean areas beyond national jurisdiction. However, no guidance is provided on the nature of the governance actions that might be taken to address the considerations.

The context set above is applicable to both the EIAs discussed by Group 1 and the SEAs discussed by Group 2.

Ecological differences

3. The great depth of most ocean areas beyond national jurisdiction create extreme conditions for biodiversity. Pressure changes continuously with increasing depth, and both temperature and, in some regions, oxygen levels are low. The conditions may be extreme, and in some places strong gradients are present. However, in general, temporal variance in physical conditions tends to be low. Waters near the surface are much less extreme environments, with greater variance spatially and temporally.

4. Habitat patchiness is important to biodiversity. For the seabed and benthic communities in waters beyond national jurisdiction, habitat patchiness can occur on spatial scales comparable to terrestrial and coastal ecosystems. However, the features of the water column are patchy on much larger spatial scales but vary on shorter time scales. Most, but not all, ocean areas beyond national jurisdiction have lower primary and secondary productivity than coastal areas and many terrestrial ecosystems. The lower productivity means that populations and communities can, in general, sustain only lower levels of perturbation without serious adverse impacts.

5. Both the lower productivity of ecosystems in ocean areas beyond national jurisdiction, and the life histories of species characteristic of those ecosystems mean that in general, recovery times from perturbations in those areas are much slower than recovery from a perturbation of similar magnitude in coastal and terrestrial ecosystems.

6. Connectivity of processes and ecosystem components is also important to biodiversity. Connectivity of marine ecosystems from coastal to deep-sea areas is poorly known but likely to be much looser than connectivity alongshore in coastal ecosystems. Organisms in the water column generally have higher migratory/dispersal abilities but limited information is available on the movement and dispersal of benthic species.

Governance Differences

7. There is a different *legal* framework for the high seas than for areas within national jurisdiction. Marine areas beyond national jurisdiction are characterized by the legal regimes for the high seas and the seabed and ocean floor and subsoil thereof (the Area). There are also different *institutional* frameworks for areas beyond national jurisdiction, involving a number of different international organizations and bodies, both regional and global, along with flag State responsibilities for their vessels and industries. These organizations, bodies and flag States and other States must cooperate to ensure sustainable use and conservation of biodiversity. As recognized by the CBD COP, the United Nations General Assembly has a central role in addressing issues relating to the conservation and sustainable use of biodiversity in marine areas beyond national jurisdiction.

8. The nature of “stakeholder” is harder to define for areas beyond national jurisdiction, because communities do not have immediate proximity to these areas.

9. Binding legislation for conduct of EIA exists in most States, whereas in areas beyond national jurisdiction relevant conventions such as the United Nations Convention on the Law of the Sea (UNCLOS) may contain obligations related to EIA but implementation is generally left to States, leading to variable standards of compliance.

Practicalities

10. Compared to coastal and terrestrial ecosystems, there is usually a paucity of data on ecosystems in areas beyond national jurisdiction. Consequently, knowledge of what ecosystem components may be at risk is poorer, and the ability to assess known risks is weaker.

11. The industry proposing the undertaking to be assessed is often based far from the site of the proposed activity, as may be the national jurisdiction with flag State responsibility for the industry.

12. The two points above together make the cost of conducting an EIA often much higher than an EIA for a comparable activity in coastal or terrestrial ecosystems. Likewise, the necessary follow-up management, control, surveillance and monitoring recommended by an EIA can be much more costly to achieve the same outcome, or less effective for a given budget.

13. There is a need for capacity-building for EIA for areas beyond national jurisdiction that is likely to be larger than the already large needs for capacity-building within national jurisdictions. In areas beyond national jurisdiction “customs of practice” for EIA are less established, methodologies are less mature, and multiple assessment cultures may converge in the same area

14. These differences have two important implications for EIA beyond national jurisdiction. First, the application of precaution will be even more important in decision-making. Second, there will necessarily be greater dependence on incremental “test-bed” approaches to permitting activities, given the outcome of an EIA. To increase the very limited knowledge, an activity may be allowed at a small scale, and carry strict conditions for monitoring and surveillance, so that the permitted activity becomes the source of better information for more complete assessment of impacts of the activity at the allowed and possibly larger scales.

GAPS RELATED TO THE GUIDELINES

15. The three annexes to the guidelines, if they are going to be part of EIA process, must be redone—almost from scratch—to be appropriate for ecosystems in areas beyond national jurisdiction.

16. Global and, where appropriate, regional standards for acceptable perturbation need to be developed. Although there is a policy aspect to “acceptable”, there is an important role for scientific and technical information on consequences of perturbations and recovery potential of these ecosystems, in informing the policy decisions.

17. There is a gap in assembling global experience with marine ecosystems beyond national jurisdiction, with regard to how those ecosystems have responded to past human impacts and natural forces, and how effective mitigation measures have been when they have been applied.

18. There needs to be a better understanding of the connectivity between impacts and ecosystem processes within and beyond national jurisdiction.

OTHER POTENTIALLY SERIOUS GAPS

19. Gaps in defining the basic governance structure need to be addressed, such as clarifying what qualifies a group as a “stakeholder”, how entitlement to compensation is established, and whose “standards” are to be applied in an EIA. How can all legitimate stakeholders achieve an equal opportunity to participate in the entire process (i.e. addressing the bias towards well-funded industries versus NGOs and governments)?

20. The knowledge gaps on marine ecosystems in areas beyond national jurisdiction must be addressed so that assessment and decision-making are based on adequate and sound science.

21. There is a huge gap in the capacity and technology transfer for doing all the necessary scientific and technical (and governance) tasks, and in collaboration among States and agencies that have some capacity to do parts of the tasks.

22. There is also a gap in the ability to exercise legitimate monitoring, control and surveillance (MCS) by governments, and to deter actions by groups choosing to enforce self-determined standards of conservation.

23. Few Regional Seas organizations and Regional Fisheries Management Organisations (RFMOs) have developed Biodiversity Strategies and Action Plans for the areas within their mandates. Many have the raw materials for development of such strategies, however (e.g. FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas¹, FAO technical guidelines on The Ecosystem Approach to Fisheries², and the FAO Code of Conduct for Responsible Fisheries³).

¹ FAO. 2009. *International Guidelines for the Management of Deep-sea Fisheries in the High Seas*. Rome: FAO.

² FAO. 2003. *The Ecosystem Approach to Fisheries*. FAO Technical Guidelines for Responsible Fisheries. Rome: FAO.

³ FAO. 1995. *Code of Conduct for Responsible Fisheries*. Rome: FAO.

Annex III

CONCLUSIONS ON THE APPLICABILITY OF THE CBD VOLUNTARY GUIDELINES ON BIODIVERSITY-INCLUSIVE ENVIRONMENTAL IMPACT ASSESSMENT (DECISION VIII/28) IN AREAS BEYOND NATIONAL JURISDICTION

(Note: What follows up until appendix 3 to this annex is a reproduction of the annex to decision VIII/28, with commentaries by the workshop provided in italics)

Introductory notes regarding the commentary entered on the individual guidelines

1. *Many of the comments entered in one guideline are equally relevant to some of the subsequent guidelines as well. In such cases, for the sake of conciseness and consistency, the first entry of a commentary point has a relatively full narrative of the major issues that will need to be addressed when the guidelines are applied in areas beyond national jurisdiction (ABNJ). Thereafter, the same point is made in a relatively cursory manner, with a reference back to the paragraph where the more complete narrative is presented. That more complete narrative applies to each guideline where it is referenced in the commentary provided. Sometimes, a basic theme comes up repeatedly, with successive commentaries making additional relevant points. To reference the full set of points that have been made, a commentary on a later guideline may then refer to the “**commentary on guideline xx and subsequent**”, where “and subsequent” refers to all the commentaries following the original xx where the commentary on guideline xx was referenced explicitly.*

2. *Many of the narratives make comparative statements. When a guideline is applied in ABNJ, the factor addressed in the guideline may be greater or less of a consideration. In all cases, the comparison refers to the application of the same guideline in terrestrial, freshwater or coastal areas. However, again for the sake of conciseness and readability, the long phrase “**relative to application of the same guideline in terrestrial, freshwater or coastal areas**” is not written out in every case. However, unless some other standard of comparison is explicitly presented, all uses of comparative terms in the narrative on individual guidelines is relative to usual applications of the guidelines in terrestrial, freshwater or coastal ecosystems.*

3. *The narrative below is always relative to application of the guideline in ABNJ, where the CBD has a role in provision of scientific and technical information. However, deep-sea areas beyond continental shelves and slopes are sometimes located within national jurisdictions. In such cases, States may wish to take the consideration(s) into account if applying the voluntary guidelines within their national jurisdictions.*

1. The guidelines are structured in accordance with the internationally accepted sequence of procedural steps characterizing good-practice environmental impact assessment (EIA).⁴ They aim at a better integration of biodiversity-related considerations into the EIA process.

2. National EIA systems are regularly being evaluated and revised. These guidelines are intended to assist national authorities, regional authorities or international agencies as appropriate in better incorporating biodiversity-related considerations during such a revision, when a significant enhancement of the EIA system can be made. This also implies that further elaboration of practical guidelines is needed to reflect the ecological, socio-economic, cultural and institutional conditions for which the EIA system is designed.

National authorities are still relevant because they have to take many of the actions in doing assessments

⁴ See, for example, the International Association for Impact Assessment’s principles of Environmental Impact Assessment best practice – www.iaia.org

and follow-up. However, regional and international agencies will have a greater role in application of the guidelines in ABNJ.

EIAs at regional and international scales are sometimes voluntary, and even when requirements for EIAs are present in binding international law, the implementation is still usually at national scale. In general international frameworks for EIA are much less mature than national frameworks.

3. The guidelines focus on how to promote and facilitate a biodiversity-inclusive EIA process. They do not provide a technical manual on how to conduct a biodiversity-inclusive assessment study.

(No special considerations.)

4. Screening and scoping are considered critical stages in the EIA process and consequently receive particular attention. Screening provides the trigger to start an EIA process. During scoping relevant impacts are identified resulting in the terms of reference for the actual impact study. The scoping stage is considered critical in the process as it defines the issues to be studied and it provides the reference information on which the review of the study results will be based. Scoping and review usually are linked to some form of public information, consultation or participation. During scoping promising alternatives can be identified that may significantly reduce or entirely prevent adverse impacts on biodiversity.

The concepts presented in this guideline are valid in ABNJ. However, the practicalities of acting on these concepts can be more challenging in ABNJ for all the reasons listed in the annex II to this report, regarding ecological and governance differences from paragraphs 3 to 9.

A. Stages in the process

5. Environmental impact assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development,⁵ taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse. The effective participation of relevant stakeholders, including indigenous and local communities, is a precondition for a successful EIA. Although legislation and practice vary around the world, the fundamental components of an EIA would necessarily involve the following stages:

When applying all the subcomponents of these guidelines:

(i) There will be transboundary challenges as well as high-seas challenges, due to ecological connectivity between areas within national jurisdiction and ABNJ. These challenges are likely to take a long time to solve, because of the complex governance structures in ABNJ. Territorial boundaries between States are also not established for all the oceans, and some extended continental shelf claims have not yet been resolved. These areas where jurisdiction is not fully established also make these guidelines complex to apply in some ocean areas.

(ii) Identification of the “stakeholders” and appropriate stakeholder forums for discussion of the issues in the guidelines is particularly difficult, because there are no universal standards for adjudicating what constitutes “having an interest” in ABNJ. There is also a lack of consensus regarding whether there are “indigenous and local communities” in ABNJ.

(iii) Achieving equity in distribution of socio-economic benefits and allocating environmental costs, and building consensus on the appropriate balance of those costs and benefits will be much more challenging, both because of difficulty in identifying stakeholders, as discussed above in paragraph (ii,) and because the “environment” of the ABNJ may be on a basin-wide or global scale rather than local or national.

⁵ The terms “project”, “activity” and “development” are used interchangeably; there is no intended distinction between them.

(a) *Screening* to determine which projects or developments require a full or partial impact assessment study;

(No special considerations.)

(b) *Scoping* to identify which potential impacts are relevant to assess (based on legislative requirements, international conventions, expert knowledge and public involvement), to identify alternative solutions that avoid, mitigate or compensate adverse impacts on biodiversity (including the option of not proceeding with the development, finding alternative designs or sites which avoid the impacts, incorporating safeguards in the design of the project, or providing compensation for adverse impacts), and finally to derive terms of reference for the impact assessment;

(i) Comment on guideline 5(ii) above is a particular concern here. This will be particularly difficult if it is necessary to decide which specific individuals, organizations, agencies, or companies are eligible for compensation and exactly who should provide that compensation.

(ii) There can also be challenges in deciding how wide a net to cast for “experts” whose knowledge is to be used in the EIA. Proponents and stakeholders, noting comment 5(ii), may have different views on the appropriate sources and types of experts, and the different views might have different cost implications for the EIA.

(c) *Assessment and evaluation of impacts and development of alternatives*, to predict and identify the likely environmental impacts of a proposed project or development, including the detailed elaboration of alternatives;

All parts of this work must be enacted with the limited knowledge and data for assessment and evaluation (see “Practicalities” in paragraphs 10 - 14 of annex II to this report). Predictions will be more uncertain, and there is less knowledge and experience to apply in developing alternatives. Hence, there may have to be a greater reliance on borrowing and adapting experience elsewhere, which will also result in greater uncertainty.

(d) *Reporting*: the environmental impact statement (EIS) or EIA report, including an environmental management plan (EMP), and a non-technical summary for the general audience;

The issues of stakeholder identification and accountabilities discussed in guidelines 5(ii) and 5(iii) indicate that there may be challenges in gaining agreement on questions like “Who is the general audience?”, “Who prepares the environmental management plan (EMP)?” and particularly “Who APPROVES the EMP?”

(e) *Review* of the environmental impact statement, based on the terms of reference (scoping) and public (including authority) participation;

As with the comment on guideline 5(d), the issue of who decides whether an EIA meets acceptable standards may be difficult to resolve. Even when there is a functioning regional fisheries management organization (RFMO) or Regional Seas organization that might provide the necessary structure for gaining agreement on that point, they have not been established everywhere in ABNJ. Even when both are functioning in an ABNJ, there may be issues that prompt both organizations to feel they should have a role in the EIA.

(f) *Decision-making* on whether to approve the project or not, and under what conditions;
and

(Comments on guidelines 5(d) and 5(e) apply here as well)

(g) *Monitoring, compliance, enforcement and environmental auditing.* Monitor whether the predicted impacts and proposed mitigation measures occur as defined in the EMP. Verify the compliance of proponent with the EMP, to ensure that unpredicted impacts or failed mitigation measures are identified and addressed in a timely fashion.

(i) The comments on guidelines 5(d) and 5(e) are relevant. Also, even with a functioning RFMO or Regional Seas organization, States are likely to be required to implement these activities, posing additional complexities in gaining agreement on what is needed at what costs, in coordinating the reporting of results, and in keeping all parties satisfied that compliance is acceptable and that unpredicted impacts have been dealt with in an acceptable manner.

(ii) It is also the case that community-based or civil society monitoring, which plays an important role in many States, will be much harder to implement in ABNJ. Also, for any specified level of monitoring and enforcement the cost to industry and to governments or agencies for their respective tasks is going to be greater, due to the greater distance between the project and the country's or agency's base of operations.

B. Biodiversity issues at different stages of environmental impact assessment

1. Screening

6. Screening is used to determine which proposals should be subject to EIA, to exclude those unlikely to have harmful environmental impacts and to indicate the level of assessment required. Screening criteria have to include biodiversity measures, or else there is a risk that proposals with potentially significant impacts on biodiversity will be screened out. The outcome of the screening process is a *screening decision*.

(The comments on guidelines 5(d) and 5(e) on authority to approve and decide are equally relevant here.)

7. Since legal requirements for EIA may not guarantee that biodiversity will be taken into account, consideration should be given to incorporating biodiversity criteria into existing, or the development of new, screening criteria. Important information for developing screening criteria can be found in national biodiversity strategies and action plans (NBSAPs) or equivalent documents. These strategies provide detailed information on conservation priorities and on types and conservation status of ecosystems. Furthermore, they describe trends and threats at ecosystem as well as species level and provide an overview of planned conservation activities.

NBSAPs rarely consider ABNJ, so they are unlikely to be good sources of guidance on reasonable criteria.

The issue of limited knowledge and data to support this step, discussed in comments on guidelines 4 and 5(c,) apply here as well.

8. *Pertinent questions from a biodiversity perspective.* Taking into account the three objectives of the Convention, fundamental questions which need to be answered in an EIA study include:

All the following questions have to be answered with much less information. Need new formulations of them, or at least new standards that the answers have to meet.

(a) Would the intended activity affect the biophysical environment directly or indirectly in such a manner or cause such biological changes that it will increase risks of extinction of genotypes, cultivars, varieties, populations of species, or the chance of loss of habitats or ecosystems?

The general comment on guideline 8 applies here. In particular, there will be less knowledge of risk of extinction or even which factors affect risk of extinction and in which ways, in ABNJ. The current work on ocean fertilization by London Convention 1972/London Protocol 1996 may be informative here.

(b) Would the intended activity surpass the maximum sustainable yield, the carrying capacity of a habitat/ecosystem or the maximum allowable disturbance level of a resource, population, or ecosystem, taking into account the full spectrum of values of that resource, population or ecosystem?

The comments on guideline 8 (a) will be even more extreme here. However, as explained in annex II to this report (paragraphs 3 - 9), it should be expected that recovery times will usually be longer so the maximum allowable disturbance in ABNJ can only be less than in areas within national jurisdiction.

(c) Would the intended activity result in changes to the access to, and/or rights over biological resources?

The comments on stakeholder identification and sharing of costs and benefits in guidelines 5(ii) and 5(iii) apply here. The reference in this Guideline to “rights” may lead to particularly difficult discussions about allocation of “rights” in ABNJ. However, it is likely that for any given activity the minimum number of those considered to legitimately share “rights” will be high and harder to establish.

9. To facilitate the development of screening criteria, the questions above have been reformulated for the three levels of diversity, reproduced in table 1 below.

Table 1. Questions pertinent to screening on biodiversity impacts

Level of diversity	Conservation of biodiversity	Sustainable use of biodiversity
Ecosystem diversity <u>6</u>	Would the intended activity lead, either directly or indirectly, to serious damage or total loss of (an) ecosystem(s), or land-use type(s), thus leading to a loss of ecosystem services of scientific/ecological value, or of cultural value?	Does the intended activity affect the sustainable human exploitation of (an) ecosystem(s) or land-use type(s) in such manner that the exploitation becomes destructive or non-sustainable (i.e. the loss of ecosystem services of social and/or economic value)?
Species diversity <u>6/</u>	Would the intended activity cause a direct or indirect loss of a population of a species?	Would the intended activity affect sustainable use of a population of a species?
Genetic diversity	Would the intended activity result in extinction of a population of a localized endemic species of scientific, ecological, or cultural value?	Does the intended activity cause a local loss of varieties/cultivars/breeds of cultivated plants and/or domesticated animals and their relatives, genes or genomes of social, scientific and economic importance?

10. Types of existing screening mechanisms include:

(a) *Positive lists* identifying projects requiring EIA (inclusion lists). A disadvantage of this approach is that the significance of impacts of projects varies substantially depending on the nature of the receiving environment, which is not taken into account.

The lack of knowledge discussed in comment in guideline 4 applies here. Usually less will be known about the receiving environments, their sensitivities to impacts, and how sensitivities might vary in space or by activity. Depending on how development and use of a positive list takes account of uncertainty, this could be a pro or a con.

6 The scale at which ecosystems are defined depends on the definition of criteria in a country, and should take into account the principles of the ecosystem approach. Similarly, the level at which “population” is to be defined depends on the screening criteria used by a country. For example, the conservation status of species can be assessed within the boundaries of a country (for legal protection), or can be assessed globally (IUCN Red Lists).

A few countries use (or have used) negative lists, identifying those projects not subject to EIA (exclusion lists). Both types of lists should be reassessed to evaluate their inclusion of biodiversity aspects.

The comments in 5 (d) and 5(e) apply here. The issue of who makes decisions about a negative list could be particularly problematic in ABNJ.

(b) Lists identifying those *geographical areas* where important biodiversity is found, where projects would require EIA. The advantage of this approach is that the emphasis is on the sensitivity of the receiving environment rather than on the type of project;

In ABNJ the spatial scales of the “areas where important biodiversity is found” will be large so this guideline could become quite prescriptive. The criteria for identifying “ecologically or biologically significant areas” (EBSAs) adopted in decision IX/20 and similar criteria such as the FAO criteria for “vulnerable marine ecosystems” (VMEs) provide a sound basis for objectively selecting areas of special biodiversity significance, have been accepted by States, and provide a pragmatic way forward in implementing this guideline in ABNJ.

(c) *Expert judgement* (with or without a limited study, sometimes referred to as *initial environmental examination* or *preliminary environmental assessment*). Biodiversity expertise should be included in expert teams; and

(No special considerations.)

(d) A *combination* of a list plus expert judgement to determine the need for an EIA.

(Special considerations in 10 (a) and 10(b) apply here.)

11. A *screening decision* defines the appropriate *level of assessment*. The result of a screening decision can be that:

(a) The proposed project is “*fatally flawed*” in that it would be inconsistent with international or national conventions, policies or laws. It is advisable not to pursue the proposed project. Should the proponent wish to proceed at his/her risk, an EIA would be required;

As discussed under governance differences in annex 2, implementation of this option, particularly the last sentence, in ABNJ raises a number of complex governance issues. The last sentence should not be an option in ABNJ, considering the issue of who decides whether the proposal is “fatally flawed”.

(b) An EIA is required (often referred to as “*category A*” projects);

(No special considerations.)

(c) A limited environmental study is sufficient because only limited environmental impacts are expected; the screening decision is based on a set of criteria with quantitative benchmarks or threshold values (often referred to as “*category B*” projects);

As with the comment on guideline 4, the concept is completely appropriate but data and knowledge to set criteria and quantitative benchmarks will be particularly incomplete in ABNJ. There are likely to be much greater challenges to experts to develop consistent approaches to setting baselines and standards in ABNJ, and individual applications of whatever approaches are preferred are likely to be contested as much or more than in areas within national jurisdiction. The precautionary approach will be particularly important in ABNJ.

(d) There is still uncertainty whether an EIA is required, and an initial environmental examination has to be conducted to determine whether a project requires EIA or not; or

(No special considerations.)

- (e) The project does not require an EIA.

(No special considerations.)

12. *Biodiversity-inclusive screening criteria* set out circumstances in which EIA is justified on the basis of biodiversity considerations. They may relate to:

(a) Categories of activities known to cause biodiversity impacts, including thresholds referring to size of the intervention area and/or magnitude, duration and frequency of the activity;

(Comment on guideline 11(c) is important here.)

- (b) The magnitude of biophysical change that is caused by the activity; or

Comment on guideline 11(c) is important here. For the same reasons, criteria for “acceptable” magnitudes of change usually will be harder to set and may be challenged more aggressively in ABNJ.

- (c) Maps indicating areas important for biodiversity, often with their legal status.

Maps of ecosystem features are only in early stages of development for most of ABNJ. The comments on use of the EBSA criteria in guideline 10(b) are relevant here.

In ABNJ all these factors need to be considered for both the “construction” and “operational” phases of projects, because the impacts could be very different.

13. A suggested approach to the development of biodiversity-inclusive screening criteria, combining the above types of criteria, includes the following steps: (i) design a biodiversity screening map indicating areas in which EIA is required; (ii) define activities for which EIA is required; (iii) define threshold values to distinguish between full, limited/undecided or no EIA (see appendix 1 for a generic set of screening criteria). The suggested approach takes account of biodiversity values (including valued ecosystem services) and activities that might impact drivers of change of biodiversity.

The comments on guideline 11(c) regarding setting benchmarks and standards have strong implications for 13 (i) and (iii), and moderate implications for (ii).

The extent and diversity of ABNJ make the notion of a single threshold for the diversity of habitats and ecosystems unlikely to be appropriate. Different thresholds would have to be considered for different deep-sea areas and ecosystem features.

For ABNJ work must be done to develop some prioritization of screening methodologies, to provide guidance on which ones provided most reliable results most cost-effectively.

14. If possible, biodiversity-inclusive screening criteria should be integrated with the development (or revision) of a national biodiversity strategy and action plan. This process can generate valuable information such as a national spatial biodiversity assessment, including conservation priorities and targets, which can guide the further development of EIA screening criteria.

This guideline is not really relevant for ABNJ as written, but marine regional biodiversity strategies and action plans are important and needed where they do not exist. Some regional seas organizations have already developed their own biodiversity strategies, and the guideline is appropriate at that scale. There would be a number of benefits if RFMOs and other relevant organizations (e.g. International Maritime Organization) were also encouraged to develop biodiversity strategies and action plans. Where this to proceed, the guideline would be relevant and helpful.

15. *Step 1:* According to the principles of the ecosystem approach, a *biodiversity screening map* is designed, indicating important ecosystem services (replacing the concept of sensitive areas – see appendix 2 below). The map is based on expert judgement and has to be formally approved.

(i) For ABNJ in light of the information and knowledge limitations discussed in the comment on guideline 4 and elsewhere in this commentary where comment 4 is referenced, it is implausible that “important ecosystem services” can be mapped on spatial scales relevant to management, and additionally the ecosystem approach is better applied in a more generic way. Moreover, the degree of degradation of the high seas is not as severe as for many coastal areas, so the need to focus on protecting limited remaining areas where ecosystem services are provided is not an appropriate starting point for policy and management in ABNJ.

(ii) As per the comment on guideline 10(b) and subsequent comments citing it, with present knowledge an approach based on the ecologically or biologically significant areas (EBSA) is considered likely to be sufficient to allow progress on conservation and sustainable use of biodiversity.

16. Suggested categories of geographically defined areas, related to important ecosystem services, are:

(a) Areas with *important regulating services in terms of maintaining biodiversity*:

Protected areas: depending on the legal provisions in a country these may be defined as areas in which no human intervention is allowed, or as areas where impact assessment at an appropriate level of detail is always required;

Areas containing *threatened ecosystems outside of formally protected areas*, where certain classes of activities (see step 2) would always require an impact assessment at an appropriate level of detail;

Areas identified as being important for the *maintenance of key ecological or evolutionary processes*, where certain classes of activities (see step 2) would always require an impact assessment at an appropriate level of detail;

Areas known to be *habitat for threatened species*, which would always require an impact assessment at an appropriate level of detail.

(b) Areas with *important regulating services for maintaining natural processes with regard to soil, water, or air*, where impact assessment at an appropriate level of detail is always required. Examples can be wetlands, highly erodible or mobile soils protected by vegetation (e.g. steep slopes, dune fields), forested areas, coastal or offshore buffer areas; etc.

(c) Areas with *important provisioning services*, where impact assessment at an appropriate level of detail is always required. Examples can be extractive reserves, lands and waters traditionally occupied or used by indigenous and local communities, fish breeding grounds; etc.

(d) Areas with *important cultural services*, where impact assessment at an appropriate level of detail is always required. Examples can be scenic landscapes, heritage sites, sacred sites; etc.

(e) Areas with *other relevant ecosystem services* (such as flood storage areas, groundwater recharge areas, catchment areas, areas with valued landscape quality, etc.); the need for impact assessment and/or the level of assessment is to be determined (depending on the screening system in place);

Guidelines 16 (a) - (e) have a strong terrestrial and national legislation character. As with the comment on guideline 2, the concepts are fine but the limited ecological knowledge and data on the high seas does not allow these criteria to be applied. The previous comments on an ecologically or biologically significant area (EBSA)-based approach as a practical option in the short term (10(b), 15(ii), etc.) are relevant here. It is important to commence action to get the EBSA criteria applied to the best information available, by appropriate groups of experts,

so these maps are available for informing EIA planning at an early stage. For the reasons discussed in annex II to this report and the comment on guideline 2, the parts of 16 (a) - (e) referring to protected areas also bring in the governance challenges of establishing protected areas on the high seas.

- (f) All other areas: no impact assessment required from a biodiversity perspective (an EIA may still be required for other reasons).

This guideline would not be applicable to ABNJ given current knowledge. A decision that an EIA is not needed would have to consider both the ecological features of the place and the activity being proposed. Given current knowledge, no categorical geographically based exclusions from EIAs are appropriate.

17. *Step 2:* Define activities for which impact assessment may be required from a biodiversity perspective. The activities are characterized by the following direct drivers of change:

(a) Change of land-use or land cover, and underground extraction: above a defined area affected, EIA always required, regardless of the location of the activity - define thresholds for level of assessment in terms of surface (or underground) area affected;

(b) Change in the use of marine and/or coastal ecosystems, and extraction of seabed resources: above a defined area affected, EIA always required, regardless of the location of the activity - define thresholds for level of assessment in terms of surface (or underground) area affected;

For both guidelines 17(a) and (b), like the comment on the more general guideline 2, the concepts are fine (with a change from “land-use” to “seabed-use” and “land cover” to “benthos”). All the issues of general limited knowledge discussed in the comments on guideline 4 and specifically for setting baselines and thresholds in the commentary on guideline 11(c), and the many other guidelines where those commentaries are cited are relevant here.

(c) Fragmentation, usually related to linear infrastructure. Above a defined length, EIA always required, regardless of the location of the activity – define thresholds for level of assessment in terms of the length of the proposed infrastructural works;

The guideline is likely to be rarely relevant in ABNJ, where the scale of habitats is generally large, especially when transport mechanisms in the three-dimensional water column are considered, and where the scales of direct impacts of most activities are generally local.

(d) Emissions, effluents or other chemical, thermal, radiation or noise emissions — relate level of assessment to the ecosystem services map;

The concept is appropriate but the commentaries on feasibility of mapping ecosystem services (guideline 15 and subsequent places where that commentary is cited) are relevant here.

(e) Introduction or removal of species, changes to ecosystem composition, ecosystem structure, or key ecosystem processes responsible for the maintenance of ecosystems and ecosystem services (see appendix 2 below for an indicative listing) — relate level of assessment to ecosystem services map.

Comments on guidelines 17(a), (b) and (d) are all relevant here.

18. It should be noted that these criteria only relate to biodiversity and serve as an add-on in situations where biodiversity has not been fully covered by the existing screening criteria.

(No special considerations.)

19. *Determining norms or threshold values for screening* is partly a technical and partly a political process the outcome of which may vary between countries and ecosystems.

The comments regarding governance in guideline 2 and who sets the standards and makes the decision in guidelines 5(d) and 5(e) are very important for all the sub-guidelines in 19.

The technical process should at least provide a description of:

(a) *Categories of activities* that create direct drivers of change (extraction, harvest or removal of species, change in land-use or cover, fragmentation and isolation, external inputs such as emissions, effluents, or other chemical, radiation, thermal or noise emissions, introduction of invasive alien species or genetically modified organisms, or change in ecosystem composition, structure or key processes), taking into account characteristics such as: type or nature of activity, magnitude, extent/location, timing, duration, reversibility/irreversibility, irreplaceability, likelihood, and significance; possibility of interaction with other activities or impacts;

Again the concept is appropriate but see the many earlier comments on maps in 10(b) and subsequent citations, thresholds in 12(b) and subsequent, and knowledge of reversibility in 8(b) and subsequent.

(b) *Where and when*: the area of influence of these direct drivers of change can be modelled or predicted; the timing and duration of influence can be similarly defined;

Commentary on guideline 5(c) on predictability and the subsequent comments citing it are all important here.

(c) *A map of valued ecosystem services* (including maintenance of biodiversity itself) on the basis of which decision makers can define levels of protection or conservation measures for each defined area. This map is the experts' input into the definition of categories on the biodiversity screening map referred to above under step 1.

Comment on 19(a) and the comments that it cites are important here as well.

2. Scoping

20. Scoping is used to define the focus of the impact assessment study and to identify key issues, which should be studied in more detail. It is used to derive terms of reference (sometimes referred to as guidelines) for the EIA study and to set out the proposed approach and methodology. Scoping also enables the competent authority (or EIA professionals in countries where scoping is voluntary) to:

Issues discussed in 5(ii), 5(d) and (e) (and subsequent citations) regarding who are the competent authorities; who identifies members of the study teams in 20(a); who are stakeholders in 20(b); and who makes the decision in 20(c) are all important when applying this guideline in ABNJ.

(a) Guide study teams on significant issues and alternatives to be assessed, clarify how they should be examined (methods of prediction and analysis, depth of analysis), and according to which guidelines and criteria;

(b) Provide an opportunity for stakeholders to have their interests taken into account in the EIA;

(c) Ensure that the resulting Environmental Impact Statement is useful to the decision maker and is understandable to the public.

21. During the scoping phase, promising alternatives can be identified for in-depth consideration during the EIA study.

22. *Consideration of mitigation and/or enhancement measures:* The purpose of mitigation in EIA is to look for ways to achieve the project objectives while avoiding negative impacts or reducing them to acceptable levels. The purpose of enhancement is to look for ways of optimizing environmental benefits. Both mitigation and enhancement of impacts should strive to ensure that the public or individuals do not bear costs, which are greater than the benefits that accrue to them.

For ABNJ “the public” has to be interpreted as the global community, which makes this logically challenging (see governance part of annex II to this report). Commentary 5(iii) is highly relevant here, as equitability of distribution of costs and benefits will not be straightforward.

23. Remedial action can take several forms, i.e. *avoidance* (or prevention), *mitigation* (by considering changes to the scale, design, location, siting, process, sequencing, phasing, management and/or monitoring of the proposed activity, as well as restoration or rehabilitation of sites), and *compensation* (often associated with residual impacts after prevention and mitigation). A ‘positive planning approach’ should be used, where avoidance has priority and compensation is used as a last resort measure. One should acknowledge that compensation will not always be possible: there are cases where it is appropriate to reject a development proposal on grounds of irreversible damage to, or irreplaceable loss of, biodiversity.

Commentary 5(ii) and subsequent are again highly pertinent. It is noted that the knowledge that can be gained from an industry operating in an area of limited knowledge can be a benefit that needs to be included in cost-benefit analyses, particularly when the scale of the commercial activity can be kept small enough initially that risk of significant adverse impacts is low.

24. Practical evidence with respect to mitigation suggests that:

(a) Timely and ample attention to mitigation and compensation, as well as the interaction with society, will largely reduce the risk of negative publicity, public opposition and delays, including associated costs.

For ABNJ public awareness of and engagement in dialogue on conservation and sustainable use is usually lower than for a comparable activity in terrestrial and coastal areas (but public awareness of ocean biodiversity and conservation is growing).

Specialist input on biodiversity can take place prior to initiating the legally required EIA process, as a component of the project proposal. This approach improves and streamlines the formal EIA process by identifying and avoiding, preventing or mitigating biodiversity impacts at the earliest possible stage of planning;

(b) Mitigation requires a joint effort of the proponent, planners, engineers, ecologists and other specialists, to arrive at the best practicable environmental option;

(c) Potential mitigation or compensation measures have to be included in an impact study in order to assess their feasibility; consequently they are best identified during the scoping stage;

Commentaries on 5(iii) and 23 are relevant here.

(d) In project planning, it has to be kept in mind that it may take time for effects to become apparent.

In ABNJ this will be true for both effects of projects and effects of mitigation measures. Logistical issues in commentary 5(g) (ii) and the very long time frames for recovery from many types of perturbations (decades to millennia) (commentary 8(b) and subsequent) will be a significant consideration in mitigation planning.

25. The following sequence of questions provides an example of the kind of information that should be requested in the terms of reference of an impact study if the project screening suggests that the proposed activity is likely to have adverse impacts on biodiversity. It should be noted that this list of steps represents an iterative process. Scoping and impact study are two formal rounds of iteration; during the study further iterative rounds may be needed, for example when alternatives to the proposed project design have to be defined and assessed.

(a) Describe the type of project, and define each project activity in terms of its nature, magnitude, location, timing, duration and frequency;

(b) Define possible alternatives, including “no net biodiversity loss” or “biodiversity restoration” alternatives (such alternatives may not be readily identifiable at the outset of impact study, and one would need to go through the impact study to determine such alternatives). Alternatives include location alternatives, scale alternatives, siting or layout alternatives, and/or technology alternatives;

Response times of some ecosystem components to restoration are often slower (commentary 8(b) and subsequent), and may result in restoration being a less attractive option. Also spatial scale in ABNJ (refer to ecological differences in annex II to this report, and commentary 13(ii) and elsewhere) makes location alternatives sometimes less likely to reduce impacts. However, the same large spatial scale of high seas ecosystems makes relocations of some types of activities more feasible because there is a wider range of areas from which to choose.

The less complete knowledge on both ecosystem dynamics and often shorter history of many types of commercial activities in ABNJ (refer to annex II to this report, commentary 4 and many other comments) mean that there often are fewer technology alternatives “on the shelf” (negative consideration) but the potential to develop new alternatives may be large (a positive consideration).

(c) Describe expected biophysical changes (in soil, water, air, flora, fauna) resulting from proposed activities or induced by any socio-economic changes caused by the activity;

Refer to annex II to this report on ecological differences, commentary 4 and others.

(d) Determine the spatial and temporal scale of influence of each biophysical change, identifying effects on connectivity between ecosystems, and potential cumulative effects;

Refer to annex II to this report on ecological differences, commentary 4 and others.

(e) Describe ecosystems and land-use types lying within the range of influence of biophysical changes; general point about more limited knowledge of ecological relationships.

Again, the same concerns as 25(c) and (d). To apply this guideline to ABNJ, it is necessary to change “land-use” to seabed and water column. There is potential for substantial progress in improving our biogeographic classifications and mapping of patterns of historical human activities in ABNJ.

(f) Determine, for each of these ecosystems or land-use types, if biophysical changes are likely to have adverse impacts on biodiversity in terms of composition, structure (spatial and temporal), and key processes. Give indication of the level certainty of predictions, and take into account mitigation measures. Highlight any irreversible impacts and any irreplaceable loss; general point about more limited knowledge of ecological relationships.

Same commentaries are in 25(c), (d) and (e). There is a particular concern about the limited ability to predict indirect adverse impacts (refer to commentary 5(c) and subsequent).

(g) For the affected areas, collect available information on baseline conditions and any anticipated trends in biodiversity in the absence of the proposal;

As noted in comments on 11(c) and subsequent, there is little capability to do this for most ABNJ. It is noted that there are very few ABNJ that have never been impacted so far and few data on conditions prior to human activities that may have already caused undocumented changes.

The large spatial scale of many species' distributions and their migratory / dispersal patterns is a positive factor, however, because it allows information to be extrapolated and integrated over large scales for many (not all) ecosystem components (see commentary 5(c)).

(h) Identify, in consultation with stakeholders, the current and potential ecosystem services provided by the affected ecosystems or land-use types and determine the values these functions represent for society (see box 1). Give an indication of the main beneficiaries and those adversely affected from an ecosystem services perspective, focusing on vulnerable stakeholders; particularly problematic in practice.

This guideline will be particularly problematic for the practice in ABNJ for reasons discussed in commentary on 5(ii), 5(iii), 5(b) (ii), and subsequent commentaries where those are cited.

(i) Determine which of these services will be significantly affected by the proposed project, giving confidence levels in predictions, and taking into account mitigation measures. Highlight any irreversible impacts and any irreplaceable loss;

The knowledge limitations (commentaries on guideline 4 and subsequent ones) are central again.

(j) Define possible measures to avoid, minimize or compensate for significant damage to, or loss of, biodiversity and/or ecosystem services; define possibilities to enhance biodiversity. Make reference to any legal requirements;

All the concerns in the commentaries cited in 25(h) are also relevant here.

(k) Evaluate the significance of residual impacts, i.e. in consultation with stakeholders define the importance of expected impacts for the alternatives considered. Relate the importance of expected impacts to a reference situation, which may be the existing situation, a historical situation, a probable future situation (e.g. the 'without project' or 'autonomous development' situation), or an external reference situation. When determining importance (weight), consider geographic importance of each residual impact (e.g. impact of local/regional/national/continental/global importance) and indicate its temporal dimension.

Same comments as in 25(h) and (j)

(l) Identify necessary surveys to gather information required to support decision making. Identify important gaps in knowledge;

Feasibility of filling gaps quickly to improve basis for decision often lower for logistic reasons discussed in 5(g)(ii) and subsequent commentaries for 5(g)(ii)

(m) Provide details on required methodology and timescale.

(No special considerations.)

26. One should bear in mind that not implementing a project may in some cases also have adverse effects on biodiversity.

In rare cases the adverse effects may be more significant than the impacts of a proposed activity (e.g. projects counteracting degradation processes).

27. An analysis of current impact assessment practice ^{7/} has provided a number of practical recommendations when addressing biodiversity-related issues:

These current impact assessments were not for impacts of human activities in ABNJ, so there is expectation that guidance on EIAs in ABNJ will evolve as experience is gained.

(a) Beyond the focus on protected species and protected areas, further attention needs to be given to (i) sustainable use of ecosystem services; (ii) ecosystem-level diversity; (iii) non-protected biodiversity; and (iv) ecological processes and their spatial scale;

High seas EIAs can not start with a “focus on protected species and protected areas”, because there is no governance mechanism yet for protected areas (refer to annex II to this report and comment for 8(c) and others), and the proportion of the high seas biota evaluated for protection as protected species is very low. Rest of paragraph is the more appropriate focus for EIAs; noting all previous qualifiers about knowledge limitations (commentary 4 and subsequent) and particularly the practicality of use of the EBSA criteria (annex I of decision IX/20), developed for ABNJ, as a practical way forward (comment on guidelines 10(b) and subsequent).

(b) The terms of reference should be unambiguous, specific and compatible with the ecosystem approach; too often, the terms of reference are too general and impractical;

Same comment regarding ecosystem approach as made in the commentary on guideline 15(i).

(c) In order to provide a sound basis for assessing the significance of impacts, baseline conditions must be defined and understood and quantified where possible. Baseline conditions are dynamic, implying that present and expected future developments if the proposed project is not implemented (autonomous development) need to be included;

Again, the guideline is conceptually fine but particularly difficult to apply in ABNJ because of limited knowledge (commentary on guideline 4 and subsequent comments that cite it), so this cannot be labelled as a precondition for a “sound basis for assessing significance of impacts”.

(d) Field surveys, quantitative data, meaningful analyses, and a broad, long-term perspective enabling cause-effect chains to be tracked in time and space are important elements when assessing biodiversity impacts.

The knowledge limitations discussed in many commentaries become even more important when there is a requirement to track cause-effect chains in space and time in ABNJ. This will not be possible for some time to come for most ecosystems in ABNJ. Potential indirect and cumulative impacts should be better assessed and understood. Same comment as in the earlier sentence in 27(d).

(e) Alternatives and/or mitigation measures must be identified and described in detail, including an analysis of their likely success and realistic potential to offset adverse project impacts;

Same comments as in other subsections of guideline 27

(f) Guidance for scoping on biodiversity issues in EIA needs to be developed at country-level, but should, where appropriate, also consider regional aspects to prevent transboundary impacts;

For ABNJ, regional scale of scoping of issues will be the usual starting point, not national scale. Global

^{7/}

See document UNEP/CBD/SBSTTA/9/INF/18.

guidance will be relevant to the regional scale of scoping.

(g) Guidance for determining levels of acceptable change to biodiversity needs to be developed at country level to facilitate decision-making;

For ABNJ the issue of standards for acceptable change will be more difficult (commentaries on 5(c), 5(d), 8 and others). These need to be developed at the regional and global scale. Given the many knowledge limitations noted throughout this review, making case-by-case evaluations challenging, development of this guidance should be a priority for action by appropriate international agencies, including the Convention on Biological Diversity.

(h) Guidance on assessing and evaluating impacts on ecosystem processes, rather than on composition or structure, need to be developed at country level. The conservation of ecosystem processes, which support composition and structure, requires a significantly larger proportion of the landscape than is required to represent biodiversity composition and structure;

Previous comments in 27(g) on global and regional rather than national level for guidance also apply here. Previous comments on limitations of knowledge in guideline 4 and subsequent, particularly regarding ecosystem processes and services (comment on guideline 15) in ABNJ also apply, so in practice evaluation of impacts will usually be of composition and structure, with any evaluation of impacts on processes only inferred indirectly. If “landscape” is replaced by “seascape” or “ocean ecosystems”, the generalization that protecting processes requires a higher proportion of the seascape be protected is still probably valid.

(i) Capacity development is needed to effectively represent biodiversity issues in the scoping stage; this will result in better guidelines for the EIA study.

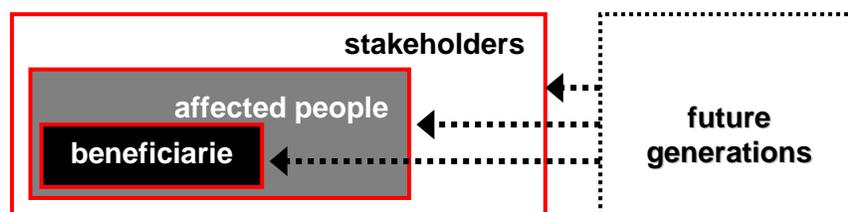
As discussed in annex II to this report, capacity development is at least as great a concern for high seas EIAs as for terrestrial and coastal EIAs.

Box 1: Stakeholders and participation

Impact assessment is concerned with (i) information, (ii) participation and (iii) transparency of decision-making. Public involvement consequently is a prerequisite for effective EIA and can take place at different levels: informing (one-way flow of information), consulting (two-way flow of information), or “real” participation (shared analysis and assessment). In all stages of EIA public participation is relevant. The legal requirements for and the level of participation differ among countries, but it is generally accepted that public consultation at the scoping and review stage are essential; participation during the assessment study is generally acknowledged to enhance the quality of the process.

With respect to biodiversity, relevant stakeholders in the process are:

- Beneficiaries of the project - target groups making use of, or putting a value to, known ecosystem services which are purposefully enhanced by the project;
- Affected people – i.e. those people that experience, as a result of the project, intended or unintended changes in ecosystem services that they value;
- General stakeholders – i.e. formal or informal institutions and groups representing either affected people or biodiversity itself.
- Future generations – “absent stakeholders”, i.e. those stakeholders of future generations, who may rely on biodiversity around which decisions are presently taken.



There are a number of potential constraints to effective public participation. These include:

- **Deficient identification** of relevant stakeholders may make public involvement ineffective;
- **Poverty**: involvement requires time spent away from income-producing tasks;
- **Rural settings**: increasing distance makes communication more difficult and expensive;
- **Illiteracy**: or lack of command of non-local languages, can inhibit representative involvement if print media are used;
- **Local values/culture**: behavioural norms or cultural practice can inhibit involvement of some groups, who may not feel free to disagree publicly with dominant groups;
- **Languages**: in some areas a number of different languages or dialects may be spoken, making communication difficult;
- **Legal systems**: may be in conflict with traditional systems, and cause confusion about rights and responsibilities for resources;
- **Interest groups**: may have conflicting or divergent views, and vested interests;
- **Confidentiality**: can be important for the proponent, who may be against early involvement and consideration of alternatives.

Also refer to decision VII/16 F containing the Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities.

All these complexities are even more challenging in ABNJ than within national jurisdictions, as per commentaries on 5(ii) and subsequent commentaries citing it. The goals of public participation are just as valid, but achieving them will only be harder.

3. *Assessment and evaluation of impacts, and development of alternatives*

For the guidelines on assessment and evaluation, a large number of the concerns already raised with regard to screening and scoping continue to be appropriate. They will not be repeated on a guideline-by-guideline basis. Rather for guidelines 28(a), (b) and (c), 29, 30, and 31 (all sub-paragraphs) the points about greater consequences from more limited knowledge in the commentary on guideline 4 and the many subsequent commentaries which cite it apply. Similarly, previous comments (5(ii) and subsequent) about the challenges posed when defining—and reaching—stakeholders in ABNJ, determining entitlement to compensation (5(b)(i) and subsequent), etc., also apply here, to, inter alia guidelines 28(c), 29, 30, 31(c), (e), (f) and g.

28. EIA should be an iterative process of assessing impacts, re-designing alternatives and comparison. The main tasks of impact analysis and assessment are:

(a) Refinement of the understanding of the nature of the potential impacts identified during screening and scoping and described in the terms of reference. This includes the identification of indirect and cumulative impacts, and of the likely cause–effect chains;

(b) Identification and description of relevant criteria for decision-making can be an essential element of this stage;

(c) Review and redesign of alternatives; consideration of mitigation and enhancement measures, as well as compensation of residual impacts; planning of impact management; evaluation of impacts; and comparison of the alternatives; and

(d) Reporting of study results in an environmental impact statement (EIS) or EIA report.

29. Assessing impacts usually involves a detailed analysis of their nature, magnitude, extent and duration, and a judgement of their significance, i.e., whether the impacts are acceptable to stakeholders and society as a whole, require mitigation and/or compensation, or are unacceptable.

30. Available biodiversity information is usually limited and descriptive, and cannot be used as a basis for numerical predictions. There is a need to develop biodiversity criteria for impact evaluation and measurable standards or objectives against which the significance of individual impacts can be evaluated. The priorities and targets set in the National Biodiversity Strategy and Action Plan process can provide guidance for developing these criteria. Tools will need to be developed to deal with uncertainty, including criteria on using risk assessment techniques, precautionary approach and adaptive management.

This guideline again brings up the potential for the National Biodiversity Strategy and Action Plans (NBSAPs) for regional fisheries management organizations (RFMOs) and Regional Seas organizations (commentary on guideline 14). Also, all the limitations on information noted in many of the preceding commentaries will be even greater in ABNJ.

31. A number of practical lessons with respect to the study process have emerged including that the assessment should:

(a) Allow for enough survey time to take seasonal features into account, where confidence levels in predicting the significance of impacts are low without such survey;

As noted in the commentary 5(g)(ii) and elsewhere, this will rarely be feasible logistically or financially in ABNJ so strategies such as incremental and carefully controlled and monitored industry activities may be an alternative in many cases (commentary on 23).

(b) Focus on processes and services, which are critical to human well-being and the integrity of ecosystems. Explain the main risks and opportunities for biodiversity;

Again, this guideline is conceptually fine, but as noted earlier (commentary on 10(b) and subsequent),

practical options will focus on EBSA-like properties more than processes and services.

(c) Apply the ecosystem approach and actively seek information from relevant stakeholders and indigenous and local communities.

Noting the commentary on guidelines 5(g)(ii) and 23, often an industry will be more likely to be a source of information than local communities. Also note again the earlier commentary on the need for different ways to apply the ecosystem approach in ABNJ (commentary on guideline 15 and subsequent).

Address any request from stakeholders for further information and/or investigation adequately. This does not necessarily imply that all requests need to be honoured; however, clear reasons should be provided where requests are not honoured;

(d) Consider the full range of factors affecting biodiversity. These include direct drivers of change associated with a proposal (e.g. land conversion, vegetation removal, emissions, disturbance, introduction of invasive alien species or genetically modified organisms, etc.) and, to the extent possible, indirect drivers of change, including demographic, economic, socio-political, cultural and technological processes or interventions;

(e) Evaluate impacts of alternatives with reference to the baseline situation. Compare against legal standards, thresholds, targets and/or objectives for biodiversity. Use national biodiversity strategies and action plans and other relevant documents for information and objectives. The vision, objectives and targets for the conservation and sustainable use of biodiversity contained in local plans, policies and strategies, as well as levels of public concern about, dependence on, or interest in, biodiversity provide useful indicators of acceptable change;

This guideline will be particularly problematic to apply in ABNJ due to all the previously discussed issues with setting baselines and reference levels for the high seas (11(c) and subsequent), the lack of biodiversity strategies and action plans for such areas (14 and subsequent), and the possible diversity of legal standards applied by different flag States to operations under their control, and different international institutions with some mandate in the areas of concern (2 and subsequent).

(f) Take account of cumulative threats and impacts resulting either from repeated impacts of projects of the same or different nature over space and time, and/or from proposed plans, programmes or policies;

(g) Recognize that biodiversity is influenced by cultural, social, economic and biophysical factors. Cooperation between different specialists in the team is thus essential, as is the integration of findings, which have bearing on biodiversity;

This guideline will also be problematic in ABNJ because of both limited knowledge of the cultural, economic, and social factors that influence biodiversity in ABNJ (refer to discussion in annex 2 to this report and many other commentaries), and the high likelihood that different cultural, social and economic values may have to be reconciled in these EIAs (commentary on 5(b)(ii), 5(b)(iii) and subsequent). There is an urgent need for better collaboration between international agencies.

(h) Provide insight into cause – effect chains. Also explain why certain chains do not need to be studied;

Previous commentary on cause-effect chains in guideline 27(d) applies here.

(i) If possible, quantify the changes in biodiversity composition, structure and key processes, as well as ecosystem services. Explain the expected consequences of the loss of biodiversity associated

with the proposal, including the costs of replacing ecosystem services if they will be adversely affected by a proposal;

(j) Indicate the legal provisions that guide decision-making. List all types of potential impacts identified during screening and scoping and described in the terms of reference and identify applicable legal provisions. Ensure that potential impacts to which no legal provision applies are taken into account during decision-making.

4. *Reporting: the environmental impact statement (EIS)*

Consistent with the information and discussion in annex 2 to this report and many of the previous commentaries, in reporting overall, in ABNJ we do not expect to ask fewer or simpler questions in the EIA. It should be expected that the answers are likely to be less complete and have greater uncertainty, justifying a need for greater precaution in decision-making, as discussed in the commentary on guideline 11(c) and subsequent.

32. The environmental impact statement consists of: (i) a technical report with annexes, (ii) an environmental management plan, providing detailed information on how measures to avoid, mitigate or compensate expected impacts are to be implemented, managed and monitored, and (iii) a non-technical summary.

33. The environmental impact statement is designed to assist:

(a) The proponent to plan, design and implement the proposal in a way that eliminates or minimizes the negative effect on the biophysical and socio-economic environments and maximizes the benefits to all parties in the most cost-effective manner;

(b) The Government or responsible authority to decide whether a proposal should be approved and the terms and conditions that should be applied; and

(c) The public to understand the proposal and its impacts on the community and environment, and provide an opportunity for comments on the proposed action for consideration by decision makers. Some adverse impacts may be wide ranging and have effects beyond the limits of particular habitats/ecosystems or national boundaries. Therefore, environmental management plans and strategies contained in the environmental impact statement should consider regional and transboundary impacts, taking into account the ecosystem approach. The inclusion of a non-technical summary of the EIA, understandable to the interested general audience, is strongly recommended.

As noted in annex II and particularly the commentaries on guidelines 5(ii) and 5(g)(ii), given the complex governance and decision-making in ABNJ, there will be special challenges in getting all the information to all the stakeholders, getting their comments to the decision-makers, and finding decisions which are credible and acceptable to all interested parties.

5. *Review of the environmental impact statement*

34. The purpose of the review of the environmental impact statement is to ensure that the information for decision makers is sufficient, focused on the key issues, and is scientifically and technically accurate. In addition, the review should evaluate whether:

(a) The likely impacts would be acceptable from an environmental viewpoint;

(b) The design complies with relevant standards and policies, or standards of good practice where official standards do not exist;

Such standards usually do not exist for ABNJ globally, and regional agencies are in very different stages in their development. This will make achieving this desirable standard difficult for some time to come.

(c) All of the relevant impacts, including indirect and cumulative impacts, of a proposed activity have been identified and adequately addressed in the EIA. To this end, biodiversity specialists should be called upon for the review and information on official standards and/or standards for good practice to be compiled and disseminated.

35. Public involvement, including the full and effective participation of indigenous and local communities, is important in various stages of the process and particularly at this stage. The concerns and comments of all stakeholders are adequately considered and included in the final report presented to decision makers. The process establishes local ownership of the proposal and promotes a better understanding of relevant issues and concerns.

Another especially problematic guideline to apply in ABNJ due to points made regarding stakeholder identification (5(ii) and subsequent) and particularly what is a "local" or "indigenous" community on the high seas. The idea of "ownership" overall as well as "local ownership" is problematic in ABNJ (commentary on 8(c) and elsewhere).

36. Review should also guarantee that the information provided in the environmental impact statement is sufficient for a decision maker to determine whether the project is compliant with or contradictory to the objectives of the Convention on Biological Diversity.

For all the issues of knowledge limitation cited in earlier commentaries (especially 5(c)), this is a desirable goal but will be done with greater uncertainty. Also it should be the objective of CBD and other relevant instruments in ABNJ.

37. The effectiveness of the review process depends on the quality of the terms of reference defining the issues to be included in the study. Scoping and review are therefore complementary stages.

38. Reviewers should as far as possible be independent and different from the persons/organizations who prepare the environmental impact statement.

The international context of EIAs in ABNJ means more thought must be given to what "independent" means in this guideline.

For sections 6 (decision-making) and 7 (monitoring, compliance, enforcement and environmental auditing) of the guidelines, these are not primarily scientific and technical issues, and therefore are outside the mandate of this review. Commentary is not provided on these guidelines individually but some general observations of a technical nature can be made. In particular and taking note of the discussions in annex 2 to this report and many of the preceding commentaries:

- *There is a need for biodiversity considerations to be an important part of decision-making;*
- *The need for precaution will be even more important in decisions on activities in ABNJ;*
- *Lack of clarity on who will be the decision-maker(s) and whose processes and standards of acceptability will be applied makes it hard to provide complete guidance on the nature of the scientific and technical support that the decision-makers and processes will require; and*
- *The EBSA framework is considered practical for application now, and if implemented would provide a sound basis for decision-making. In the long term a more complete consideration of ecosystem services is desirable, but not likely to be feasible soon.*

6. Decision-making

39. Decision-making takes place throughout the process of EIA in an incremental way from the screening and scoping stages to decisions during data-collecting and analysis, and impact prediction, to making choices between alternatives and mitigation measures, and finally the decision to either refuse or authorize the project.

40. Biodiversity issues should play a part in decision-making throughout. The final decision is essentially a political choice about whether or not the proposal is to proceed, and under what conditions. If rejected, the project can be redesigned and resubmitted. It is desirable that the proponent and the decision-making body are two different entities.

41. It is important that there are clear criteria for taking biodiversity into account in decision-making, and to guide trade-offs between social, economic and environmental issues including biodiversity. These criteria draw on principles, objectives, targets and standards for biodiversity and ecosystem services contained in international and national, regional and local laws, policies, plans and strategies.

A major component of this guideline is a policy issue. However, if “clear criteria for taking biodiversity into account in decision-making” are required, they will be more challenging to develop for high seas than for coastal and terrestrial ecosystems, as discussed in the commentaries on guidelines 12(b), 13(ii), and subsequent.

42. The precautionary approach should be applied in decision-making in cases of scientific uncertainty when there is a risk of significant harm to biodiversity. Higher risks and/or greater potential harm to biodiversity require greater reliability and certainty of information. The reverse implies that the precautionary approach should not be pursued to the extreme; in case of minimal risk, a greater level of uncertainty can be accepted. Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management have been developed under the Precautionary Principle Project, a joint initiative of Fauna & Flora International, IUCN-The World Conservation Union, ResourceAfrica and TRAFFIC, and are available in English, French and Spanish at: <http://www.pprinciple.net/>.

Some agencies with interests in ABNJ also have guidelines for application of precaution (e.g. the FAO Technical Guidelines for Responsible Fisheries – Precautionary Approach to Capture Fisheries and Species Introduction⁸), and these are relevant in application of this guideline.

43. Instead of weighing conservation goals against development goals, the decision should seek to strike a balance between conservation and sustainable use for economically viable, and socially and ecologically sustainable solutions.

7. Monitoring, compliance, enforcement and environmental auditing

44. EIA does not stop with the production of a report and a decision on the proposed project. Activities that have to make sure the recommendations from EIS or EMP are implemented are commonly grouped under the heading of “EIA follow-up”. They may include activities related to monitoring, compliance, enforcement and environmental auditing. Roles and responsibilities with respect to these are variable and depend on regulatory frameworks in place.

45. Monitoring and auditing are used to compare the actual outcomes after project implementation has started with those anticipated before implementation. It also serves to verify that the proponent is

⁸ FAO. 1996. Precautionary Approach to Capture Fisheries and Species Introductions. *FAO Technical Guidelines for Responsible Fisheries*. No. 2. Elaborated by the Technical Consultation on the Precautionary Approach to Capture Fisheries (Including Species Introductions). Lysekil, Sweden, 6-13 June 1995. Rome, FAO.

compliant with the environmental management plan (EMP). The EMP can be a separate document, but is considered part of the environmental impact statement. An EMP usually is required to obtain a permission to implement the project. In a number of countries, an EMP is not a legal requirement.

46. Management plans, programmes and systems, including clear management targets, responsibilities and appropriate monitoring should be established to ensure that mitigation is effectively implemented, unforeseen negative effects or trends are detected and addressed, and expected benefits (or positive developments) are achieved as the project proceeds. Sound baseline information and/or pre-implementation monitoring is essential to provide a reliable benchmark against which changes caused by the project can be measured. Provision should be made for emergency response measures and/or contingency plans where unforeseen events or accidents could threaten biodiversity. The EMP should define responsibilities, budgets and any necessary training for monitoring and impact management, and describe how results will be reported and to whom.

In ABNJ the reality is that pre/implementation monitoring will not be feasible or cost-effective for many activities (commentaries on 5(g)(ii) and subsequent). This makes effects-monitoring, contingency planning and regular evaluation of monitoring results of even greater importance in high seas ecosystems, particularly if linked to a very gradual up-scaling of the activity being assessed (commentary on guideline 23 and subsequent).

47. Monitoring focuses on those components of biodiversity most likely to change as a result of the project. The use of indicator organisms or ecosystems that are most sensitive to the predicted impacts is thus appropriate, to provide the earliest possible indication of undesirable change. Since monitoring often has to consider natural fluxes as well as human-induced effects, complementary indicators may be appropriate in monitoring. Indicators should be specific, measurable, achievable, relevant and timely. Where possible, the choice of indicators should be aligned with existing indicator processes.

As discussed in commentary 5(g) (ii) and subsequent, monitoring in itself will be technically difficult and costly on the large scales of ecosystems in ABNJ. However, the incremental development of activities by industries (commentary on guideline 23) may offer opportunities for cost-effective monitoring, and be more important in ABNJ than in national jurisdictions.

48. The results of monitoring provide information for periodic review and alteration of environmental management plans, and for optimizing environmental protection through good, adaptive management at all stages of the project. Biodiversity data generated by EIA should be made accessible and useable by others and should be linked to biodiversity assessment processes being designed and carried out at the national and global levels.

Industry's concerns about confidentiality of commercial aspects of their operations need to be addressed early in the planning for monitoring and evaluation.

49. Provision is made for regular auditing in order to verify the proponent's compliance with the EMP, and to assess the need for adaptation of the EMP (usually including the proponent's license). An environmental audit is an independent examination and assessment of a project's (past) performance. It is part of the evaluation of the environmental management plan and contributes to the enforcement of EIA approval decisions.

50. Implementation of activities described in the EMP and formally regulated in the proponent's environmental license in practice depends on the enforcement of formal procedures. It is commonly found that a lack of enforcement leads to reduced compliance and inadequate implementation of EMPs. Competent authorities are responsible for enforcing pertinent impact assessment regulations, when formal regulations are in place.

The contents of appendices 1, 2, and 3 of the guidelines are clearly derived from experience with terrestrial ecosystems. Many of the criteria and examples are not relevant to high seas marine ecosystems. Appendices relevant to marine ecosystems beyond national jurisdiction would have to be developed by experts on those ecosystems, if governance processes adopted criterion-based approaches for deciding on whether an EIA is needed. Annex IV to this report represents a good start on such new appendices.

Appendix 1

INDICATIVE SET OF SCREENING CRITERIA TO BE FURTHER ELABORATED AT NATIONAL LEVEL ⁹

Category A: Environmental impact assessment mandatory for:

- Activities in protected areas (define type and level of protection);
- Activities in threatened ecosystems outside protected areas;
- Activities in ecological corridors identified as being important for ecological or evolutionary processes;
- Activities in areas known to provide important ecosystem services;
- Activities in areas known to be habitat for threatened species;
- Extractive activities or activities leading to a change of land-use occupying or directly influencing an area of at minimum a certain threshold size (land or water, above or underground - threshold to be defined);
- Creation of linear infrastructure that leads to fragmentation of habitats over a minimum length (threshold to be defined);
- Activities resulting in emissions, effluents, and/or other means of chemical, radiation, thermal or noise emissions in areas providing key ecosystem services (areas to be defined); ¹⁰
- Activities leading to changes in ecosystem composition, ecosystem structure or key processes ¹¹ responsible for the maintenance of ecosystems and ecosystem services in areas providing key ecosystem services (areas to be defined).

Category B: The need for, or the level of environmental impact assessment is to be determined for:

- Activities resulting in emissions, effluents and/or other chemical, thermal, radiation or noise emissions in areas providing other relevant ecosystem services (areas to be defined);
- Activities leading to changes in ecosystem composition, ecosystem structure, or ecosystem functions responsible for the maintenance of ecosystems and ecosystem services in areas providing other relevant ecosystem services (areas to be defined);
- Extractive activities, activities leading to a change of land-use or a change of use of inland water ecosystems or a change of use of marine and coastal ecosystems, and creation of linear infrastructure below the Category A threshold, in areas providing key and other relevant ecosystem services (areas to be defined).

⁹ Note: These criteria only pertain to biodiversity and should therefore be applied as an add-on to existing screening criteria.

¹⁰ For a non-exhaustive list of ecosystem services, see appendix 2 below.

¹¹ For examples of these aspects of biodiversity, see appendix 3 below.

*Appendix 2***INDICATIVE LIST OF ECOSYSTEM SERVICES**

Regulating services responsible for maintaining natural processes and dynamics

Biodiversity-related regulating services

- maintenance of genetic, species and ecosystem composition
- maintenance of ecosystem structure
- maintenance of key ecosystem processes for creating or maintaining biodiversity

Land-based regulating services

- decomposition of organic material
- natural desalinization of soils
- development / prevention of acid sulphate soils
- biological control mechanisms
- pollination of crops
- seasonal cleansing of soils
- soil water storage capacity
- coastal protection against floods
- coastal stabilization (against accretion / erosion)
- soil protection
- suitability for human settlement
- suitability for leisure and tourism activities
- suitability for nature conservation
- suitability for infrastructure

Water related regulating services

- water filtering
- dilution of pollutants
- discharge of pollutants
- flushing / cleansing
- bio-chemical/physical purification of water
- storage of pollutants
- flow regulation for flood control
- river base flow regulation
- water storage capacity
- ground water recharge capacity
- regulation of water balance
- sedimentation / retention capacity
- protection against water erosion
- protection against wave action
- prevention of saline groundwater intrusion
- prevention of saline surface-water intrusion
- transmission of diseases
- suitability for navigation

Water related regulating services (ctd.)

- suitability for leisure and tourism activities
- suitability for nature conservation

Air-related regulating services

- filtering of air
- carry off by air to other areas
- photo-chemical air processing (smog)
- wind breaks
- transmission of diseases
- carbon sequestration

Provisioning services: harvestable goods

Natural production:

- timber
- firewood
- grasses (construction and artisanal use)
- fodder & manure
- harvestable peat
- secondary (minor) products
- harvestable bush meat
- fish and shellfish
- drinking water supply
- supply of water for irrigation and industry
- water supply for hydroelectricity
- supply of surface water for other landscapes
- supply of groundwater for other landscapes
- genetic material

Nature-based human production

- crop productivity
- tree plantations productivity
- managed forest productivity
- rangeland/livestock productivity
- aquaculture productivity (freshwater)
- mariculture productivity (brackish/saltwater)

Cultural services providing a source of artistic, aesthetic, spiritual, religious, recreational or scientific enrichment, or nonmaterial benefits.

Supporting services necessary for the production of all other ecosystem services

- soil formation,
- nutrients cycling
- primary production.
- evolutionary processes

Appendix 3

ASPECTS OF BIODIVERSITY: COMPOSITION, STRUCTURE AND KEY PROCESSES

Composition	Influenced by:
<p>Minimal viable population of:</p> <p>(a) legally protected varieties/cultivars/breeds of cultivated plants and/or domesticated animals and their relatives, genes or genomes of social, scientific and economic importance;</p> <p>(b) legally protected species;</p> <p>(c) migratory birds, migratory fish, species protected by CITES;</p> <p>(d) non-legally protected, but threatened species (cf. IUCN Red List of Threatened Species); species which are important in local livelihoods and cultures.</p>	<ul style="list-style-type: none"> - selective removal of one or a few species by fisheries, forestry, hunting, collecting of plants (including living botanical and zoological resources); - fragmentation of their habitats leading to reproductive isolation; - introducing genetically modified organisms that may transfer transgenes to varieties / cultivars / breeds of cultivated plants and/or domesticated animals and their relatives; - disturbance or pollution; - habitat alteration or reduction; - introduction of (non-endemic) predators, competitors or parasites of protected species.
Structure	Influenced by:
<p><i>Changes in spatial or temporal structure, at the scale of relevant areas, such as:</i></p> <p>(a) legally protected areas;</p> <p>(b) areas providing important ecosystem services, such as (i) maintaining high diversity (hot spots), large numbers of endemic or threatened species, required by migratory species; (ii) services of social, economic, cultural or scientific importance; (iii) or supporting services associated with key evolutionary or other biological processes.</p>	<p>Effects of human activities that work on a similar (or larger) scale as the area under consideration. For example, by emissions into the area, diversion of surface water that flows through the area, extraction of groundwater in a shared aquifer, disturbance by noise or lights, pollution through air, etc.</p>
<p><i>Food web structure and interactions:</i></p> <p>Species or groups of species perform certain roles in the food web (functional groups); changes in species composition may not necessarily lead to changes in the food web as long as roles are taken over by other species.</p>	<p>All influences mentioned with <i>composition</i> may lead to changes in the food web, but only when an entire role (or functional group) is affected. Specialized ecological knowledge is required.</p>
<p><i>Presence of keystone species:</i></p> <p>Keystone species often singularly represent a given functional type (or role) in the food web.</p>	<p>All influences mentioned with composition that work directly on keystone species. This is a relatively new, but rapidly developing field of ecological knowledge. Examples are:</p> <ul style="list-style-type: none"> - sea otters and kelp forest - elephants and African savannah - starfish in intertidal zones - salmon in temperate rainforest - tiger shark in some marine ecosystems - beaver in some freshwater habitats - black-tailed prairie dogs and prairies

Key processes (selected examples only)	Influenced by:
Sedimentation patterns (sediment transport, sedimentation, and accretion) in intertidal systems (mangroves, mudflats, seagrass beds)	Reduced sediment supply by damming of rivers; interruption of littoral drift by seaward structures
Plant-animal dependency for pollination, seed dispersal, nutrient cycling in tropical rainforests	Selective removal of species by logging, collecting or hunting
Soil surface stability and soil processes in montane forests	Imprudent logging leads to increased erosion and loss of top soil
Nutrient cycling by invertebrates and fungi in deciduous forests	Soil and groundwater acidity by use of agrochemicals.
Plant available moisture in non-forested, steeply sloping mountains	Overgrazing and soil compaction lead to reduced available soil moisture
Grazing by herbivorous mammals in savannahs	Cattle ranching practises
Succession after fire, and dependence on fire for completion of life-cycles in savannahs	Exclusion of fire leads to loss of species diversity
Available nutrients and sunlight penetration in freshwater lakes	In-flow of fertilizers and activities leading to increased turbidity of water (dredging, emissions)
Hydrological regime in floodplains, flooded forests and tidal wetlands	Changes in river hydrology or tidal rhythm by hydraulic infrastructure or water diversions
Permanently waterlogged conditions in peat swamps and acid-sulphate soils	Drainage leads to destruction of vegetation (and peat formation process), oxidization of peat layers and subsequent soil subsidence; acid sulphate soils rapidly degrade when oxidized
Evaporation surplus in saline / alkaline lakes	Outfall of drainage water into these lakes changes the water balance
Tidal prism and salt/freshwater balance in estuaries	Infrastructure creating blockages to tidal influence; changes in river hydrology change the salt balance in estuaries.
Hydrological processes like vertical convection, currents and drifts, and the transverse circulation in coastal seas	Coastal infrastructure, dredging.
Population dynamics	Reduction in habitat leads to dramatic drop in population size, leading to extinction

Annex IV

Conclusions on Strategic Environmental Assessment in Marine Areas beyond National Jurisdiction

Introduction

1. The sustainable use of living and non-living resources, and the conservation of biodiversity in the oceans demand coordinated planning at the regional scale and over long timescales. The conduct of Strategic Environmental Assessments (SEAs) allows sustainable use of the riches of the ocean while at the same time safeguarding the marine environment and the long-term future of marine ecosystems, and creates opportunities for stakeholders, including the general public, to participate in the assessment processes.
2. SEAs have a number of distinct advantages that are particularly appropriate for planning the management of marine areas beyond national jurisdiction (ABNJ).
3. SEAs allow the management of activities of multiple users of ocean space to be coordinated, including by being incorporated into an integrated management plan for a region or subregion. Such plans can be formulated to maintain species, habitats and ecosystem structure in space and time over the full water column down to and including the seabed and the subsoil thereof with regard to individual and cumulative impacts by users and in relation to natural environmental change.
4. In many cases, the distribution of species and their abundances and biomass are very poorly known in marine ABNJ. SEAs therefore allow for modifications to be made to the integrated management plan with time, as more knowledge is gained on the ecosystems and biodiversity and the severity of impacts.
5. SEAs can be set up to address the large scale of ocean ecosystems such as abyssal plain muds and the vast mountain ranges of mid-ocean ridges, and the connectivity of localized and separated ecosystems, such as hydrothermal vents, cold-water coral reefs and seamounts. SEAs can take into account the topography of the seafloor, latitudinal change, depth zonation (e.g., the effects of temperature and pressure on the physiology of fauna) and food input (from photosynthetic and/or chemosynthetic sources).
6. SEAs need to be conducted at spatial and temporal scales appropriate to the proposed programme, plan or policy concerned.
7. It should be recognized that the process of undertaking a SEA in marine ABNJ may often be constrained by lack of information on, *inter alia*, (a) the distribution and density of species and habitats, (b) the natural variation in species and habitat distributions, (c) the effects of human-induced events on species and habitats, and (d) linkages between and among species and their physical environments. In this regard, the SEA may establish environmental networks to promote further research into the marine environment and to stimulate co-funding with industry, government, NGOs and science. Such networks should be open to all stakeholders in a region or sub-region, including relevant regulatory bodies and international organizations having a mandate over activities beyond national jurisdiction in that region or sub-region.

Conclusions

8. The SEA Working Group focused on scientific and technical elements in its review of the guidance document on biodiversity-inclusive SEA, as adopted in decision VIII/28, and identified elements which were lacking in this guidance in relation to marine ABNJ, as well as specific characteristics and ecosystems in marine ABNJ that must be considered in undertaking SEA for marine ABNJ. The discussion was organized around the summary overview of biodiversity triggers, as in appendix 2 to annex to decision VIII/28.

9. The working group considered the guidance document on biodiversity-inclusive SEA, as adopted in decision VIII/28, and concluded that a supplementary guideline be drafted that specifically focuses on marine ABNJ and its particular characteristics to further enhance the use of the existing guidance. In this regard it is also recommended that input be sought from key agencies, including, *inter alia* (in alphabetical order): UN-DOALOS, FAO, International Maritime Organization (IMO) and ISA.

10. The working group recognized that “ecosystem services provided by biodiversity” is broad enough to include important provisioning services that are of interest to humans and to be considered in SEA for marine ABNJ, such as provisioning of oil, gas, non-fuel minerals and transport. The group considered that these and similar services should be considered in SEA.

11. The working group considered that ecosystems that provide *for* biodiversity must be also considered in marine ABNJ (see further in list of ecosystems below).

12. The group identified topographic features and associated ecosystems found in marine ABNJ that should be considered with regard to trigger 1 (area known to provide important ecosystem services) as in appendix 2 to annex to decision VIII/28, including:

Fixed (attached to seabed)

- Abyssal plains
- Mid-ocean ridges and seafloor spreading centres
- Abyssal hills
- Hydrothermal vents
- Cold seeps
- Mud volcanoes
- Seamounts
- Sponge fields
- Cold-water coral “reefs”

Floating (pelagic/found in water column)*

- Ephemeral/mobile: Sea-surface micro-layer
Fronts, eddies, filaments and gyres
Ocean “triad” areas: enrich, concentrate, retain species/nutrients
Marine snow
- Semi-permanent: Upwelling/downwelling areas
Oxygen-minimum zones
Benthic boundary layer
Nepheloid layer
Water mass boundaries/density differences
Thermocline
Sediment-water interface

Both fixed and floating: depth-related ecosystem structures; food-falls

*Essential to both biodiversity functioning and ecosystem mechanisms but do not fit neatly into either the biodiversity or ecosystem concepts. Here, marine species, including sea birds, aggregate to breed, spawn, feed, rest, seek refuge or normally live in large numbers (school), or migrate.

13. The group also identified ecosystem services that are characteristic of marine ABNJ that should be considered with regard to trigger 1, as including:

Regulating services responsible for maintaining natural processes and dynamics

Biodiversity-related regulating services

- maintenance of genetic, species, and ecosystem diversity
- maintenance of ecosystem composition and structure
- maintenance of key ecosystem processes for creating or maintaining biodiversity

Seabed-based regulating services

- decomposition of organic material
- concentration of organic material
- maintenance of (natural) pH levels and geochemical gradients in sediments
- carbon sequestration
- storage of pollutants
- biological control mechanisms
- production and maintenance of soft (sediments, includes mud, oozes) and maintenance of hard substrata for settlement, growth, reproduction and dispersal of organisms
- maintenance of structural complexity
- cleansing of sediments and hard substrata
- sediment mixing and oxygenation (bioturbation)
- substrate protection and stabilization
- formation of non-fuel mineral resources (e.g., ferro-manganese crusts and nodules)
- regulating methane and carbon dioxide formation and release
- suitability for leisure and tourism activities
- suitability for nature conservation
- suitability for infrastructure
- suitability for marine scientific research and bioprospecting

Seawater-related regulating services

- oxygen production
- climate regulation
- uptake of carbon dioxide
- regulation of seawater chemical balance (salinity, pH, oxygen concentration)
- transfer of organic and inorganic carbon, nutrients and pollutants, both down the water column (biological pump) and up (daily vertical movement of organisms in deep scattering layer)
- filtering
- dilution of pollutants
- flushing / cleansing
- bio-chemical/physical purification of water
- storage of pollutants
- concentration of pollutants
- carbon sequestration
- suitability for navigation
- suitability for leisure and tourism activities
- suitability for nature conservation

Provisioning services: harvestable goods

Natural production:

- marine living resources
- marine non-living resources
- genetic and biochemical material

Nature-based human production

- aquaculture productivity
- mariculture productivity
- drinking water supply
- bio-energy production from algae

Cultural services providing a source of artistic, aesthetic, spiritual, religious, recreational, archaeological, historical or scientific enrichment, or nonmaterial benefits.

Supporting services necessary for the production of all other ecosystem services

- sediment formation
- nutrient cycling
- primary production
 - o chemosynthetic
 - o photosynthetic
- oxygen production (here too, as well as in regulating services)
- evolutionary processes

14. With regard to combined triggers 1 and 2, and triggers 2 and 3 in the aforesaid appendix 2 to annex to decision VIII/28, we agreed that further elaboration of a list of direct and indirect drivers of biophysical changes and non-biophysical changes is necessary to make these concepts applicable to marine ABNJ. Direct and indirect drivers could include the following, *inter alia*¹²:

Commercial activities

- o Trade/shipping patterns
- o Fisheries
- o Extraction of non-living resources
- o Bioprospecting
- o Geo-engineering/climate change mitigation
- o Infrastructure, e.g. seabed cables and pipelines
- o Waste disposal

Social-economic patterns and trends

- o Consumption patterns (e.g., coral jewellery; eco-labelled fish)
- o popular perceptions of charismatic vs. non-charismatic species (cetaceans vs. sea cucumbers) and ecosystems (coldwater reefs vs. abyssal muddy plains)
- o Economic demands causing pressure to increase exploitation of resources in ABNJ
- o Climate-change-driven resource exploitation

Scientific and technological changes

- o Technological improvements, e.g. improved navigation, changes to fishing gear
- o Improved mapping and visualization capabilities
- o Research on ecosystems beyond national jurisdiction and dissemination (or not) of results and effects on the availability of and accessibility to the new resources identified by the research
- o Collection of information on activities in the ocean (e.g., observers on fishery vessels)

Governance and management system drivers

- o National and international regulations
- o Marine spatial planning within national jurisdictions can have effects in ABNJ

¹² Military activities are recognized as drivers, but not included under any category.

○ Management of resources within and beyond national jurisdiction (e.g., straddling stocks)
These drivers may affect the ecosystems and their components directly (e.g. increasing mortality, habitat loss or increasing pollution) or indirectly (e.g. habitat fragmentation, introductions of alien species, diseases, etc).

15. The meeting identified potential elements for guidelines on an SEA report on plans, programmes and policies likely to pose risk of serious adverse impacts on marine biodiversity beyond national jurisdiction; these could include:

- The contents and the main objectives of the plan, programme or policy;
- The relevant aspects of the current state of the environment and the likely evolution thereof should the plan or programme not be implemented;
- The characteristics of the environment in areas likely to be significantly affected;
- The environmental issues being addressed by the plan, programme or policy;
- The environmental objectives established at international, national and other levels which are relevant to the plan or programme, including the conservation of marine biodiversity beyond national jurisdiction, and the ways in which these objectives and other environmental considerations have been taken into account during its preparation;
- The likely significant environmental effects on marine biodiversity in areas beyond national jurisdiction of implementing the plan, programme or policy and its reasonable alternatives;
- The likely significant environmental effects of plans, programmes and policies within national jurisdiction in the same general region as marine biodiversity in ABNJ and vice versa;
- Measures to prevent, reduce or mitigate any significant adverse effects on marine biodiversity beyond national jurisdiction which may result from the implementation of the plan, programme or policy;
- Factors which will trigger a new SEA or EIA of an activity;
- An outline of how the assessment was undertaken, including difficulties encountered in providing the information to be included, such as technical deficiencies or lack of knowledge;
- Potential strategies for filling gaps in knowledge;
- Measures envisaged for monitoring environmental effects of the plan, programme or policy on marine biodiversity beyond national jurisdiction.
