Sixth Conference of the Parties to the Convention on Biological Diversity
The Hague, The Netherlands, 7-19 April 2002

Decision VI/7. Identification, monitoring, indicators and assessments

A. Further development of guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation or processes and in strategic impact assessment

The Conference of the Parties

1. *Endorses* the draft guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or processes and in strategic environmental assessment contained in the annex to the present decision;

2. *Urges* Parties, other Governments and organizations to apply the guidelines as appropriate in the context of their implementation of paragraph 1 of Article 14 of the Convention and share their experience, *inter ali*a, through the clearing-house mechanism and national reporting;

3. *Requests* the Executive Secretary to compile and disseminate, through the clearing-house mechanism and other means of communication, current experiences in environmental impact assessment and strategic environmental assessment procedures that incorporate biodiversity-related issues, as well as experiences of Parties in applying the guidelines; in light of this information, to prepare, in collaboration with relevant organizations, in particular the International Association for Impact Assessment, proposals for further development and refinement of the guidelines, particularly to incorporate all stages of the environmental impact assessment and strategic environmental assessment processes taking into account the ecosystem approach (particularly principles 4, 7 and 8) and to provide a report of this work to the Subsidiary Body prior to the seventh meeting of the Conference of the Parties.

Annex

GUIDELINES FOR INCORPORATING BIODIVERSITY-RELATED ISSUES INTO ENVIRONMENTAL IMPACT ASSESSMENT LEGISLATION AND/OR PROCESS AND IN STRATEGIC ENVIRONMENTAL ASSESSMENT

1. For the purpose of these guidelines, the following definitions are used for environmental impact assessment and strategic environmental assessment:

(a) *Environmental impact assessment* is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse. Although legislation and practice vary around the world, the fundamental components of an environmental impact assessment would necessarily involve the following stages:

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

(ii) Scoping to identify which potential impacts are relevant to assess, and to derive terms of reference for the impact assessment;

(iii) Impact assessment to predict and identify the likely environmental impacts of a proposed project or development taking into account inter-related consequences of the project proposal, and the socio-economic impacts;

(iv) Identifying mitigation measures (including 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);

(v) Deciding whether to approve the project or not; and

(vi) Monitoring and evaluating the development activities, predicted impacts and proposed mitigation measures to ensure that unpredicted impacts or failed mitigation measures are identified and addressed in a timely fashion;

(b) *Strategic environmental assessment* is the formalized, systematic and comprehensive process of identifying and evaluating the environmental consequences of proposed policies, plans or programmes to ensure that they are fully included and appropriately addressed at the earliest possible stage of decision-making on a par with economic and social considerations.[1] Strategic environmental assessment, by its nature, covers a wider range of activities or a wider area and often over a longer time span than the environmental impact assessment of projects. Strategic environmental assessment might be applied to an entire sector (such as a national policy on energy for example) or to a geographical area, (for example, in the context of a regional development scheme). The basic steps of strategic environmental assessment are similar to the steps in environmental impact assessment procedures,[2] but the scope differs. Strategic environmental assessment does not replace or reduce the need for project-level environmental impact assessment, but it can help to streamline the

[1] Based on Sadler and Verheem, 1996.
[2] Saddler and Verheem, 1996; South Africa, 2000; Nierynck, 1997; Nooteboom, 1999.

incorporation of environmental concerns (including biodiversity) into the decision-making process, often making project-level environmental impact assessment a more effective process.

1. Purpose and approach

2. The objective of these draft guidelines is to provide general advice on incorporation of biodiversity considerations into new or existing environmental impact assessment procedures, noting that existing procedures take biodiversity into consideration in different ways. A draft framework has been developed to address the screening and scoping phases of environmental impact assessment. Further development of the framework will be required to address the incorporation of biodiversity into subsequent stages of the environmental impact assessment process, including impact assessment, mitigation, evaluation and monitoring, and into strategic environmental assessment.

3. Individual countries may redefine the steps in the procedure to their needs and requirements as befits their institutional and legal setting. The environmental impact assessment process, in order to be effective, should be fully incorporated into existing legal planning processes and not be seen as an "add-on" process.

4. As a prerequisite, the definition of the term "environment" in national legislation and procedures should fully incorporate the concept of biological diversity as defined by the Convention on Biological Diversity, such that plants, animals and micro-organisms are considered at the genetic, species/community and ecosystem/habitat levels, and also in terms of ecosystem structure and function.

5. With regard to biodiversity considerations, the ecosystem approach, as described in decision V/6 of the Conference of the Parties and taking into account any further elaboration of the concept within the framework of the Convention, is an appropriate framework for the assessment of planned action and policies. In accordance with the approach, the proper temporal and spatial scales of the problems should be determined as well as the functions of biodiversity and their tangible and intangible values for humans that could be affected by the proposed project or policy, the type of adaptive mitigation measures and the need for the participation of stakeholders in decision-making.

6. Environmental impact assessment procedures should refer to other relevant national, regional and international legislation, regulations, guidelines and other policy documents such as the national biodiversity strategy and action plan documents, the Convention on Biological Diversity and biodiversity-related conventions and agreements including, in particular, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals and the related agreements, the Convention on Wetlands (Ramsar, Iran, 1971), the Convention on Environmental Impact Assessment in a Transboundary Context; the United Nations Convention on the Law of the Sea; the European Union directives on environmental impact assessment, and the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources.

7. Consideration should be given to improving integration of national biodiversity strategy and action plans and national development strategies using strategic environmental assessment as a tool for such integration to promote the establishment of clear conservation targets through the national biodiversity strategy and action plan process and the use of those targets for the screening and scoping targets of environmental impact assessment and for developing mitigation measures.

2. Biodiversity issues at different stages of environmental impact assessment

(a) Screening

8. Screening is used to determine which proposals should be subject to impact assessment, to exclude those unlikely to have harmful environmental impacts and to indicate the level of environmental appraisal required. If screening criteria do not include biodiversity measures, there is a risk that proposals with potentially significant impacts on biodiversity will be screened out.

9. Since a legal requirement for environmental impact assessment on environmental grounds does not guarantee that biological diversity will be taken into account, consideration should be given to incorporating biodiversity criteria into existing or new screening criteria.

10. Types of existing screening mechanisms include:

(a) Positive lists identifying projects requiring environmental impact assessment. A few countries use (or have used) negative lists, identifying those projects not subject to environmental impact assessment. These lists should be reassessed to evaluate their inclusion of biodiversity aspects;

(b) Expert judgement (with or without a limited study, sometimes referred to as "initial environmental examination" or "preliminary environmental assessment"); and

(c) A combination of a positive list and expert judgement; for a number of activities an environmental impact assessment is more appropriate, for others an expert judgement may be desirable to determine the need for an environmental impact assessment.

11. The result of screening can be that:

(a) An environmental impact assessment is required;

(b) (i) 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 norms or threshold values;

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

(c) The project does not require an environmental impact assessment.

12. How to use these guidelines for screening:

(a) Countries with a positive list identifying projects requiring environmental impact assessment should use, as appropriate, appendices I and II below for guidance on reconsidering their existing positive list with respect to biological diversity considerations. By assessing the possible impacts of categories of activities on biological diversity the existing list can be adjusted, if required;

(b) In countries where screening is based on expert judgement, experience has shown that professionals make screening decisions, often using "mini environmental impact assessment" to come to this decision. These guidelines, its appendices and other guidelines help provide these professionals with the means to come to a motivated, transparent and consistent screening decision. Furthermore, the expert teams should include professionals with biodiversity expertise;

(c) In countries where screening is based on a combination of a positive list and expert judgement, country-specific thematic or sector guidelines, often including quantitative norms or thresholds, facilitate the responsible people to make a well-founded and defendable decision. For biodiversity, thematic guidelines could be developed,[3] sector guidelines need to be reviewed on biodiversity considerations.

The screening criteria

13. Screening criteria may relate to: (i) categories of activities, including thresholds referring to magnitude of the activity and/or size of the intervention area, duration and frequency or to (ii) a magnitude of biophysical change that is caused by the activity, or to (iii) maps indicating areas important for biodiversity with special legal status or of high biodiversity value and endemism, species patterns, breeding sites, or areas with species of high genetic value.

14. Determining norms or threshold values is partly a technical and partly a political process of which the outcome may vary for countries and for ecosystems. The technical process should at least provide a description of:

(a) Categories of activities that may affect biological diversity and the direct and indirect biophysical changes likely to result from these activities, taking into account characteristics such as: type or nature of activity, magnitude, extent/location, timing, duration, reversibility/irreversibility, likelihood, and significance; possibility of interaction with other activities or impacts;

(b) Area of influence. Knowing the biophysical changes that result from an activity, the expected area of influence of these changes can be modelled or predicted, including the probability of off-site effects;

(c) Biodiversity maps indicating ecosystems and/or land-use types and their use and non-use values (showing the use and non-use values of biodiversity).

15. The process of developing a national biodiversity strategy and action plan can generate valuable information such as conservation priorities and targets which can guide further development of environmental impact assessment screening criteria.[4] Appendix 2 below presents a generic list of criteria, intended to be a practical reference for further in-country development of criteria.

[3] Some concrete targets in the draft global strategy for plant conservation (see item 17.3 below).
[4] Summarized in the IAIA information document by Treweek, 2001, box 2.

Pertinent questions for screening

16. Considering the objectives of the Convention on Biological Diversity, i.e., in particular, conservation, sustainable use and equitable sharing of benefits derived from biological diversity, fundamental questions need to be answered in an environment impact assessment study:

(a) Does the intended activity affect the physical environment in such a manner or cause such biological losses that it influences the chance of extinction of cultivars, varieties, populations of species, or the chance of loss of habitats or ecosystems?

(b) Does the intended activity surpass the maximal sustainable yield, the carrying capacity of a habitat/ecosystem or the maximum and minimum[5] allowable disturbance level of a resource, population, or ecosystem?

(c) Does the intended activity result in changes to the access to and rights over biological resources?

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

(b) Scoping

18. Scoping narrows the focus of the broad issues found to be significant during the screening stage. It is used to derive terms of reference (sometimes referred to as guidelines) for environmental impact assessment. Scoping also enables the competent authority (or environmental impact assessment professionals in countries where scoping is voluntary):

(a) To 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) To provide an opportunity for stakeholders to have their interests taken into account in the environmental impact assessment;

(c) To ensure that the resulting environmental impact statement is useful to the decision maker and is understandable to the public.

19. During the scoping phase, promising alternatives can be identified for in-depth consideration during the environmental impact assessment study.

20. The following sequence provides an example of iterative mechanism for scoping, impact assessment and consideration of mitigation measures, which should be carried out with the help of existing information and the available knowledge among stakeholders:

(a) Describe the type of project, its nature, magnitude, location, timing, duration and frequency;

[5] For example, fire can be too frequent and too infrequent to sustain the integrity/health of a given ecosystem.

(b) Describe the expected biophysical changes in soil, water, air, flora and fauna;

(c) Describe biophysical changes that result from social change processes as a result of the proposed project;

(d) Determine the spatial and temporal scale of influence of each biophysical change;

(e) Describe ecosystems and land-use types potentially influenced by the biophysical changes identified;

(f) Determine for each ecosystem or land-use type if the biophysical changes affect one of the following components of biological diversity: the composition (what is there), the temporal/spatial structure (how are biodiversity components organized in time and space), or key processes (how is biodiversity created and/or maintained);

(g) Identify in consultation with stakeholders the current and potential use-functions, non-use functions and other longer-term less tangible benefits of biological diversity provided by the ecosystems or land-use types and determine the values these functions represent for society (see appendix 3 for an indicative list of functions);

(h) Determine which of these functions will be significantly affected by the proposed project, taking into account mitigation measures;

(i) For each alternative, define mitigation and/or compensation measures to avoid, minimize or compensate the expected impacts;

(j) With the help of the biodiversity checklist on scoping (see appendix 4 below), determine which issues will provide information relevant to decision making and can realistically be studied;

(k) Provide information on the severity of impacts, i.e. apply weights to the expected impacts for the alternatives considered. Weigh expected impacts to a reference situation (baseline), which may be the existing situation, a historical situation, or an external reference situation;

(l) Identify necessary surveys to gather comprehensive information about the biological diversity in the affected area where appropriate.

21. The expected impacts of the proposed activity, including identified alternatives, should be compared with the selected reference situation and with the autonomous development (what will happen with biodiversity over time if the project is not implemented). There should be awareness that doing nothing may in some cases also have significant effects on biological diversity, sometimes even worse than the impacts of the proposed activity (e.g. projects counteracting degradation processes).

22. At present, evaluation criteria for biological diversity, especially at ecosystem level, are under-developed and need serious attention when developing in-country mechanisms to incorporate biodiversity in environmental impact assessment.

(c) Impact analysis and assessment

23. Environmental impact assessment should be an iterative process of assessing impacts, redesigning 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 causes of the impacts (impact analysis and assessment). Identification and description of relevant criteria for decision-making can be an essential element of this period;

(b) Review and redesign of alternatives; consideration of mitigation measures; planning of impact management; evaluation of impacts; and comparison of the alternatives; and

(c) Reporting of study results in a environmental impact statement.

24. Assessing impacts usually involves a detailed analysis of their nature, magnitude, extent and effect, and a judgement of their significance, i.e., whether the impacts are acceptable to stakeholders, require mitigation, or are just unacceptable. Biodiversity information available is usually limited and descriptive and cannot be used as a basis for numerical predictions. There is a need to develop or compile biodiversity criteria for impact evaluation and to have measurable standards or objectives against which the significance of individual impacts can be evaluated. The priorities and targets set in the national biodiversity action plan and strategy 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.

(d) Consideration of mitigation measures

25. If the evaluation process concludes that the impacts are significant, the next stage in the process is to propose mitigation ideally drawn together into an "environmental management plan". The purpose of mitigation in environmental impact assessment is to look for better ways to implement project activities so that negative impacts of the activities are avoided or reduced to acceptable levels and the environmental benefits are enhanced, and to make sure that the public or individuals do not bear costs which are greater than the benefits which accrue to them. Remedial action can take several forms, i.e. avoidance (or prevention), mitigation (including restoration and rehabilitation of sites), and compensation (often associated with residual impacts after prevention and mitigation).

(e) Reporting: the environmental impact statement (EIS)

26. The environmental impact statement is designed to assist: (i) 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; (ii) the Government or responsible authority to decide whether a proposal should be approved and the terms and conditions that should be applied; and (iii) 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.

(f) Review

27. The purpose of review of the environmental impact statement is to ensure that the information for decision makers is sufficient, focused on the key issues, scientifically and technically accurate, and if the likely impacts are acceptable from an environmental viewpoint and the design complies with relevant standards and policies, or standards of good practice where official standards do not exist. The review should also consider whether all of the relevant impacts of a proposed activity have been identified and adequately addressed in the environmental impact assessment. 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.

28. Public involvement, including minority groups, is important in various stages of the process and particularly at this stage. The concerns and comments of all stakeholders are 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.

29. 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.

(g) Decision-making

30. Decision-making takes place throughout the process of environmental impact assessment 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 between refusal or authorization of the project. Biodiversity issues should play a part in decision-making throughout. This 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.

31. The precautionary approach should be applied in decision-making in cases of scientific uncertainty about risk of significant harm to biodiversity. As scientific certainty improves, decisions can be modified accordingly.

(h) Monitoring and environmental auditing

32. Monitoring and auditing are used to see what actually occurs after project implementation has started. Predicted impacts on biodiversity should be monitored, as should the effectiveness of mitigation measures proposed in the environmental impact assessment. Proper environmental management should ensure that anticipated impacts are maintained within predicted levels, and unanticipated impacts are managed before they become a problem and the expected benefits (or positive developments) are achieved as the project proceeds. The results of monitoring provide information for periodic review and alteration of environmental management plans, and for optimizing environmental protection through good practice at all stages of the project. Biodiversity data generated by environmental impact assessment should be made accessible and useable by others

and should be linked to biodiversity assessment processes being designed and carried out under the Convention on Biological Diversity.

33. An environmental audit is an independent examination and assessment of a project's (past) performance, is part of the evaluation of the environmental management plan and contributes to the enforcement of EIA approval decisions.

3. Incorporation of biodiversity considerations in strategic environmental assessments

34. The guidelines proposed for the integration of biodiversity in environmental impact assessment are also applicable to strategic environmental assessment, taking into account that for the latter type of assessment, biological diversity concerns should be considered from the early stages of the drafting process, including when developing new legislative and regulatory frameworks (decision V/18, paras. 1 (c) and 2 (a)), and at the decision-making and/or environmental planning levels (decision V/18, para. 2 (a)), and that strategic environmental assessments by their nature cover policies and programmes, a wider range of activities over a wider area.

35. Strategic environmental assessment, while not a new process, is not practised as widely as environmental impact assessment. As experience accumulates in countries, it may then be necessary to draw more specific guidelines for the incorporation of biodiversity in the process.

4. Ways and means

(a) Capacity-building

36. Any activity aimed at the incorporation of biodiversity considerations into national environmental impact assessment systems should be accompanied by appropriate capacity development activities. Expertise in taxonomy,[6] conservation biology, ecology, and traditional knowledge is required as well as local expertise in methodologies, techniques and procedures. Environmental impact assessments should involve ecologists with extensive knowledge on the relevant ecosystem(s) in the assessment team.

37. It is also recommended to develop training workshops on biodiversity and environmental impact/strategic environmental assessment for both assessment practitioners and biodiversity specialists to build a common understanding of the issues. School and university curricula should be reviewed to ensure that they incorporate material on biodiversity conservation, sustainable development and environmental impact/strategic environmental assessment.

38. Biodiversity-relevant data should be organized in regularly updated and accessible databases, making use of rosters of biodiversity experts.

(b) Legislative authority

39. If environmental impact assessment and strategic environmental assessment procedures are incorporated into legislation, and the requirements for project/policy developers to find the most

[6] See the Global Taxonomy Initiative and the programme of work (decision VI/8).

environmentally sound, efficient options that avoid, reduce or mitigate biodiversity and other adverse impacts are made explicit, this will prompt developers to, at a very early stage, use environmental impact assessment tools to improve the development process prior to the project consent stage or in some cases prior to screening procedures.

(c) Participation

40. Relevant stakeholders or their representatives, and in particular indigenous and local communities should be involved in the development of guidelines or recommendations for environmental impact assessments as well as throughout the assessment processes relevant to them, including decision-making.

(d) Incentives

41. The possible link between impact assessment and incentive measures is pointed out in decision III/18 of the Conference of the Parties, on incentive measures. In paragraph 6 of that decision, the Conference of the Parties encouraged Parties to incorporate biological diversity considerations into impact assessments as a step in the design and implementation of incentive measures. The endorsement of the impact assessment process and its implementation within a legislative framework can act as an incentive, especially if applied at the policy level, to protect and, in certain cases even restore and rehabilitate biological diversity.[7] Financial or other incentives can also be part of a negotiated approval package for a project.

(e) Cooperation

42. Regional collaboration is of particular importance, including for the development of criteria and indicators for the evaluation of impact and possibly criteria and indicators that can provide early warning of potential threats and adequately distinguish the effects of anthropogenic activities from natural processes, and the use of standardized methods of collection, assembly and exchange of information is needed to ensure regional compatibility and accessibility of data. Guidelines and sharing of information and experiences should be made available through, *inter ali*a, the Convention's clearing-house mechanism.

43. As a follow-up to the implementation of decision IV/10 C of the Conference of the Parties, collaboration between the Convention on Biological Diversity and other biodiversity-related conventions, including in particular the Ramsar Convention and the Convention on Migratory Species, which have listed sites and binding agreements on certain species, and other relevant organizations and bodies will facilitate the development and implementation of any guidelines agreed upon for the integration of biodiversity-related issues in environmental impact assessment and strategic environmental assessment. Such a collaborative approach, also embodied in resolution VII.16 of the Conference of the Parties to the Ramsar Convention ("The Ramsar Convention and impact assessment: strategic, environmental and social"), could lead to the development of an umbrella set of guidelines on impact assessment for biodiversity-related conventions.

44. Web-based resources such as the clearing-house mechanism of the Convention on Biological

[7] UNEP/CBD/COP/4/20 and UNEP/CBD/SBSTTA/4/10.

Diversity may help to raise awareness about best available methods and useful sources of information and experience, and should be developed and used for the provision and exchange of information on environmental impact assessment.

45. Communication between practitioners of environmental impact assessment and scientists working in the biodiversity domain is in urgent need of improvement and should be enhanced through workshops and case-study assessments.[8]

[8] UNEP/CBD/COP/5/INF/34.

Appendix 1

QUESTIONS PERTINENT TO SCREENING ON BIOLOGICAL DIVERSITY IMPACTS

Level of diversity (1)	Biological Diversity Perspective	
	Conservation of biological diversity (Non-use values)	*Sustainable use of biodiversity (Use values)*
Generic diversity (2)	(I) 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?	
Species diversity	(II) Does the intended activity cause a direct or indirect loss of a population of a species?	(III) Does the intended activity affect the sustainable use of a population of a species?
Ecosystem diversity (2)	(IV) Does the intended activity lead to serious damage or total loss of (an) ecosystem(s) or land-use type(s), thus leading to a loss of ecosystem diversity (i.e. the loss of indirect use values and non-use values)?	(V) Does the intended activity affect the sustainable exploitation of (an) ecosystem(s) or land-use type(s) by humans in such manner that the exploitation becomes destructive or non-sustainable (i.e. the loss of direct use values)?

(1) The potential loss of natural genetic diversity (genetic erosion) is extremely difficult to determine, and does not provide any practical clues for formal screening. The issue probably only comes up when dealing with highly threatened, legally protected species which are limited in numbers and/or have highly separated populations (rhinoceros, tigers, whales, etc.), or when complete ecosystems become separated and the risk of genetic erosion applies to many species (the reason to construct so-called eco-ducts across major line infrastructure). These issues are dealt with at species or ecosystem level.

(2) Species diversity: The level at which "population" is to be defined fully depends on the screening criteria used by a country. For example, in the process of obtaining a special status, 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). Similarly, the scale at which ecosystems are defined depends on the definition of criteria in a country.

Appendix 2

THE SCREENING CRITERIA

This is a suggested outline of a set of screening criteria, to be elaborated on country level. It only deals with biodiversity criteria and thus is an add-on to already existing screening criteria.

Category A: Environmental impact assessment mandatory:

Only in the case criteria can be based on formal legal backing, such as:

- National legislation, for example in case of impact on protected species and protected areas;
- International conventions such as CITES, the Convention on Biological Diversity, Ramsar Convention on Wetlands, etc.;
- Directives from supranational bodies, such as the European Union directive 92/43/EEC of 21 May 1992 on conservation of natural habitats and of wild fauna and flora and directive 79/409/EEC on the conservation of wild birds.

Indicative list of activities for which an environmental impact assessment could be mandatory:

(a) **At the genetic level** (relates to screening question I in appendix 1 above):

- Directly or indirectly cause a local loss of legally protected varieties/cultivars/breeds of cultivated plants and/or domesticated animals and their relatives, genes or genomes of social, scientific and economic importance e.g. by introducing living modified organisms that can transfer transgenes to legally protected varieties/cultivars/breeds of cultivated plants and/or domesticated animals and their relatives.

(b) **At species level** (relates to screening question II and III in appendix 1 above):

- Directly affect legally protected species, for example by extractive, polluting or other disturbing activities;
- Indirectly affect legally protected species, for example by reducing its habitat, altering its habitat in such a manner that its survival is threatened, introducing predators, competitors or parasites of protected species, alien species or GMOs;
- Directly or indirectly affect all of the above for cases which are important in respect of e.g. stop-over areas for migratory birds, breeding grounds of migratory fish, commercial trade in species protected by CITES.
- Directly or indirectly affect non-legally protected, threatened species.

(c) **At ecosystem level** (screening questions IV and V in appendix 1 above):

- Are located in legally protected areas ;

- Are located in the vicinity of legally protected areas;

- Have direct influence on legally protected areas, 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.

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

In cases where there is no legal basis to require an environmental impact assessment, but one can suspect that the proposed activity may have a significant impact on biological diversity, or that a limited study is needed to solve uncertainties or design limited mitigation measures. This category covers the frequently referred to but difficult to use concept of "sensitive areas". As long as so-called sensitive areas do not have any legal protected status it is difficult to use the concept in practice, so a more practical alternative is provided.

The following categories of criteria point towards possible impacts on biological diversity, and further attention is thus required:

(a) **Activities in, or in the vicinity of, or with influence on areas with legal status having a probable link to biological diversity but not legally protecting biological diversity** *(relates to all five screening questions in appendix 1 abov*e). For example: a Ramsar site has the official recognition of having internationally important wetland values, but this recognition does not automatically imply legal protection of biological diversity in these wetlands). Other examples include areas allocated to indigenous and local communities, extractive reserves, landscape preservation areas, sites covered by international treaties or conventions for preservation of natural and/or cultural heritage, such as the UNESCO biosphere reserves and World Heritage Sites;

(b) **Impacts on biological diversity possible or likely, but the environmental impact assessment is not necessarily triggered by law:**

(i) **At the genetic level:**

- Replacing agricultural, forestry or fishery varieties or breeds by new varieties, including the introduction of living modified organisms (LMOs) *(screening questions I and I*I).

(ii) **At the species level:**

- All introductions of non-indigenous species *(questions II and II*I);

- All activities which directly or indirectly affect sensitive or threatened species if or in case these species are not yet protected (good reference for threatened species is provided by the IUCN Red Lists); sensitive species may be endemic, umbrella

species, species at the edge of their range, or with restricted distributions, rapidly declining species *(question I*). Particular attention should be given to species which are important in local livelihoods and cultures;

- All extractive activities related to the direct exploitation of species (fisheries, forestry, hunting, collecting of plants (including living botanical and zoological resources), etc.) *(question II*);

- All activities leading to reproductive isolation of populations of species (such as line infrastructure) *(question I*);

(iii) **At the ecosystem level:**

- All extractive activities related to the use of resources on which biological diversity depends (exploitation of surface and groundwater, open pit mining of soil components such as clay, sand, gravel, etc.) *(questions IV and* V);

- All activities involving the clearing or flooding of land *(questions IV and* V);

- All activities leading to pollution of the environment *(questions IV and* V);

- Activities leading to the displacement of people *(questions IV and* V);

- All activities leading to reproductive isolation of ecosystems *(question I*V);

- All activities that significantly affect ecosystem functions that represent values for society (see appendix 3 below for a list of functions provided by nature). Some of these functions depend on relatively neglected taxa;

- All activities in areas of known importance for biological diversity *(questions IV and* V), such as areas containing high diversity (hot spots), large numbers of endemic or threatened species, or wilderness; required by migratory species; of social, economic, cultural or scientific importance; or which are representative, unique (e.g. where rare or sensitive species occur) or associated with key evolutionary or other biological processes.

Category C: no environmental impact assessment required

Activities which are not covered by one of the categories A or B, or are designated as category C after initial environmental examination.

The generic nature of these guidelines does not allow for the positive identification of types of activities or areas where environmental impact assessment from a biodiversity perspective is not needed. At country level, however, it will be possible to indicate geographical areas where biological diversity considerations do not play a role of importance and, conversely, areas where they do play an important role (biodiversity-sensitive areas).

Appendix 3

INDICATIVE LIST (NON-EXHAUSTIVE) OF EXAMPLES OF FUNCTIONS OF THE NATURAL ENVIRONMENT THAT ARE DIRECTLY (FLORA AND FAUNA) OR INDIRECTLY (SERVICES PROVIDED BY ECOSYSTEMS SUCH AS WATER SUPPLY) DERIVED FROM BIOLOGICAL DIVERSITY.

Production functions

Natural production

- Timber production
- Firewood production
- Production of harvestable grasses (construction and artisanal use)
- Naturally produced fodder & manure
- Harvestable peat
- Secondary (minor) products
- Harvestable bush meat (food)
- Fish and shellfish productivity
- Drinking water supply
- Supply of water for irrigation and industry
- Water supply for hydroelectricity
- Supply of surface water for other landscapes
- Supply of ground water for other landscapes

Nature-based human production

- Crop productivity
- Tree plantations productivity
- Managed forest productivity
- Rangeland/livestock productivity
- Aquaculture productivity (freshwater)
- Mariculture productivity (brackish/saltwater)

Carrying functions

- Suitability for constructions
- Suitability for indigenous settlement
- Suitability for rural settlement
- Suitability for urban settlement
- Suitability for industry
- Suitability for infrastructure
- Suitability for transport infrastructure
- Suitability for shipping / navigation
- Suitability for road transport
- Suitability for rail transport
- Suitability for air transport
- Suitability for power distribution
- Suitability for use of pipelines
- Suitability for leisure and tourism activities
- Suitability for nature conservation

Processing and regulation functions

Land-based processing and regulation functions

- Decomposition of organic material (land based)
- Natural desalinization of soils
- Development / prevention of acid sulphate soils
- Biological control mechanisms
- Seasonal cleansing of soils
- Soil water storage capacity
- Coastal protection against floods
- Coastal stabilization (against accretion /erosion)
- Soil protection

Water related processing and regulation functions

- Water filtering function
- Dilution of pollutants function
- Discharge of pollutants function
- Flushing / cleansing function
- Bio-chemical/physical purification of water
- Storage for pollutants function
- 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

Air-related processing and regulation functions

- Filtering of air
- Carry off by air to other areas
- Photo-chemical air processing (smog)
- Wind breaks
- Transmission of diseases
- Carbon sequestration

Biodiversity-related regulation functions

- Maintenance of genetic, species and ecosystem composition
- Maintenance of horizontal and vertical spatial structure, and of temporal structure
- Maintenance of key processes for structuring or maintaining biological diversity
- Maintenance of pollinator services

Signification functions

- Cultural/religious/scientific/landscape functions

Appendix 4

BIODIVERSITY CHECKLIST ON SCOPING FOR THE IDENTIFICATION OF THE IMPACTS OF PROPOSED PROJECTS ON COMPONENTS OF BIODIVERSITY (NOT EXHAUSTIVE).

		Components of Biological Diversity			
		Composition	***Structure (temporal)***	*Structure (Spatial: horizontal and vertical)*	***Key processes***
LEVELS OF BIOLOGICAL DIVERSITY	**Genetic diversity**	▪ Minimal viable population (avoid destruction by inbreeding / gene erosion) ▪ Local cultivars. ▪ Living modified organisms.	▪ Cycles with high and low genetic diversity within a population.	▪ Dispersal of natural genetic variability ▪ Dispersal of agricultural cultivars.	▪ Exchange of genetic material between populations (gene flow) ▪ Mutagenic influences ▪ Intraspecific competition
	Species diversity	▪ Species composition, genera, families etc, rarity/abundance, endemism/ exotics ▪ Population size and trends ▪ Known key species (essential role) ▪ Conservation status	▪ Seasonal, lunar, tidal, ▪ diurnal rhythms (migration, breeding, flowering, leaf development, etc.) ▪ Reproductive rate, fertility, mortality, growth rate. ▪ Reproductive strategy.	▪ Minimal areas for species to survive. ▪ Essential areas for migrating species. ▪ Niche requirements within ecosystem (substrate preference, layer within ecosystem) ▪ Relative or absolute isolation	▪ Regulation mechanisms such as predation, herbivory, parasitism ▪ Interactions between species. ▪ Ecological function of a species
	Ecosystem diversity	▪ Types and surface area of ecosystems ▪ Uniqueness / abundance ▪ Succession stage, existing disturbances and trends (=autonomous development)	▪ Adaptations to/dependency ***on*** regular rhythms: seasonal ▪ Adaptations to/dependency of ***on*** irregular events: droughts, floods, frost, fire, wind ▪ Succession (rate)	▪ Spatial relations between landscape elements (local/remote) ▪ Spatial distribution (continuous, patchy); ▪ Minimal area for ecosystem to survive. ▪ Vertical structure (layered, horizons, stratified).	▪ Structuring process(es) of key importance for the maintenance of the ecosystem itself or for other ecosystems.