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SYNTHESIS OF REPORTS AND CASE-STUDIES RELATING
TO ENVIRONMENTAL IMPACT ASSESSMENT

Note by the Executive Secretary

I. INTRODUCTION

1. This note has been prepared by the Executive Secretary for the fourth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) following decision IV/10 (C) on "Impact assessment and minimizing adverse effects: consideration of measures for the implementation of Article 14", adopted at the fourth meeting of the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD).

2. Concerning impact assessment, the above decision invites Parties, Governments, national and international organisations, and indigenous and local communities embodying traditional lifestyles, to transmit (information) to the Executive Secretary for the purpose of exchanging information and sharing experiences on:

- a) Impact assessments that consider environmental effects and interrelated socio-economic aspects relevant to biological diversity;
- b) Strategic environmental assessments;

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- c) Ways and means for fully incorporating biodiversity considerations into environmental impact assessment procedures;
- d) Reports and case studies relating to environmental impact assessment in the thematic areas specifically referred to in its (COP's) decisions, particularly with respect to biological diversity, including in respect of activities with transboundary implications and for environmental impacts having cumulative effects on biological diversity;
- e) Reports relating to existing legislation, experience with environmental impact assessment procedures and guidelines for environmental impact assessment, particularly with regard to the incorporation of biological diversity considerations into environmental impact assessment;
- f) Reports concerning the implementation of mitigating measures and incentive schemes to enhance compliance with existing national environmental impact assessment systems.

3. This report presents a synthesis of the information contained in submissions and other relevant information, for the consideration of SBSTTA. It is structured as follows: synthesis of submissions and other relevant information received by the Secretariat; collaboration with other international organisations and relevant information submitted by those organisations; conclusions and recommendations.

II. SYNTHESIS OF SUBMISSIONS AND OTHER RELEVANT INFORMATION

4. In response to a letter from the Executive Secretary requesting information from Parties, Governments and organisations, submissions were provided by the Governments of Argentina, Australia, Dominican Republic, Namibia and Oman, as well as by the Canadian International Development Agency, the United Nations Environment Programme and the World Bank. The complete inputs have been made available through the CBD Clearing-House Mechanism and can be found at the Secretariat web site (<http://www.biodiv.org>).

5. The structure of paragraph 1 of decision IV/10 (C) has been followed to compile and present the information. Nonetheless, it is important to note that many case studies, which have been classified under a specific category of information, as delimited in sub paragraphs -(d), also contain elements relevant to other categories of paragraph 1. Whenever this is the case, the situation is highlighted.

2.1 Impact assessments that consider environmental effects and interrelated socio-economic aspects relevant to biological diversity

6. One of the six case studies submitted by Australia and the case study submitted by Argentina were found consistent with this category of impact assessment. The Australian case study analyses the impact assessment carried out before further developing the Perth airport, in Western Australia, to

include a business and recreational park. The Argentinean case study refers to an industrial and forestry project carried out in the Provinces of Tierra del Fuego, Antartida and Islas del Atlantico Sur. The Australian case study is also relevant under Strategic Environmental Assessment [para.1 (b), dec.IV/10 (C)].

(a) Perth Airport Business and Recreational Park Stage 2

7. The proposal to further develop the Perth airport constituted an environmentally significant Commonwealth action. Consequently, the Federal Environment Minister asked the Federal Airports Corporation, which had the control of the land at the time of the assessment, to prepare a Public Environment Report (PER) to be released to public review, as requested by the Environment Protection (Impact of Proposals) Act of 1974.

8. Among the biological diversity issues raised in the PER, was the impact on the habitat of Pseudemydura umbrina, the Western Swamp Tortoise, a species listed under the IUCN Amphibia-Reptilia Red Data Book and the Endangered Species Protection Act of 1992. The Western Swamp Tortoise is possibly Australia's most threatened vertebrate, with less than 40 animals estimated to remain in the wild. The PER indicated that a record exists of a juvenile Western Swamp Tortoise being found nearby in the period 1969 to 1970; its special significance was also noted and further surveys had been approved to determine its existence. It is noted, however, that the PER did not assess the impacts of the proposed development on the Western Swamp Tortoise.

9. Many public submissions responding to the PER raised concerns about the possible impacts upon this species. Responding to those concerns, the Federal Environment Minister halted the assessment process, calling for a survey to be undertaken of the Western Swamp Tortoise and its habitat on the Perth airport. While no tortoises were found during the survey, a number of areas were identified as potential habitat for the reintroduction of the species. An Environment Strategy has since been developed for the management of the airport. This includes actions for the establishment of nature conservation areas for the protection of rare and endangered flora and fauna; the updating of baseline surveys of rare and endangered flora and fauna; and the negotiation of research projects with universities to advise on means to enhance and extend habitats for rare and endangered species.

(b) Project "Rio Grande" of the firm Lenga Patagonia

10. The Argentinean case study reports on the establishment of two industrial complexes, in the territory of Tolhuin and Rio Grande, able to produce about 200.000 cubic metres of wood products per year. An EIA was carried out in order to comply with Law n.55 and Decrees 1341/96 and ~~2/1984~~ of the Province of Tierra del Fuego.

11. Since the establishment of protected areas is not requested by law in Argentina, the executor of the project, the firm "Lenga Patagonia", as owner of considerable parts of the forest in Tierra del Fuego, made a deal with the Argentinean Government, which also owns a large part of the forest

resources, for each of them to allocate 7,000 hectares of productive forest as natural reserves.

12. Besides management and monitoring activities and scientific investigation in the interested areas, the executor of the project has endorsed the "stewardship principles" in order to guarantee a balance among economic, environmental and social aspects of this project. In this regard, the enterprise is carrying out the following activities: a selective cutting of the forest; the creation of a tree nursery for reforestation; the use of buffer or protected zones and actions for the maintenance of a sustainable level of biological diversity in the deforested areas. On the basis of these principles, the case study concludes that many positive results were achieved, among which the employment of eight hundred people. The details regarding employment and other socio-economic implications are not elaborated on.

13. From these two case studies it can be deduced that lack of knowledge of biological resources constitutes a serious limitation in carrying out such assessments. To obviate this limitation, lists of protected or endangered sites or species, in this case the IUCN Red Data Book prove to be a useful source to refer to at a preliminary stage of the assessment. Enabling active participation by interested and affected stakeholders in the assessment process, including indigenous and local communities embodying traditional lifestyles, as well as non-governmental organisations [para.7, dec.IV/10 (C)], is another important element of the assessment process.

2.2 Strategic Environmental Assessment

14. Strategic Environmental Assessment (SEA) is the environmental assessment of a strategic action: a policy, plan or programme. More specifically, SEA has been defined as: "the formalised, systematic and comprehensive process of evaluating the environmental effects of a policy, plan or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making"¹.

15. Environmental Impact Assessment (EIA) is generally used for evaluating the likely environmental impacts of a proposed development project or activity whereas SEA applies at policy and decision-making level. Consequently, EIA usually only takes place once many strategic decisions have already been taken, thereby reacting to development proposals rather than proactively anticipating them. SEA, on the contrary, can incorporate environmental issues intrinsically into project planning by influencing the context within which project decisions are made.

16. The only case study which falls under this section was submitted by Australia. It reports on impact assessment carried out on the Water Infrastructure Planning and Development Implementation Plan. It takes into account socio-economic aspects relevant to biological diversity [para.1(a), dec.IV/10(C)] and relates to environmental impact assessment in the thematic areas addressed in COP decisions [para.1(d), dec.IV/10(C)]. It is also noted that the World Bank Sourcebook, outlined in section 2.3 below, includes S

¹ (Thérivel, R, et al. (1992) Strategic Environmental Assessment, Earthscan, London).

(a) Water Infrastructure Planning and Development Implementation Plan

17. The Queensland Government has endorsed the Water Infrastructure Planning and Development Implementation Plan which includes a range of catchment studies, individual water infrastructure proposals and other investigations. Impact assessment is undertaken for individual components in accordance with section 29(2) of the State Development and Public Works Organisation Act of 1971 on Policies and Administrative Arrangements for Impact Assessment. In accordance with national agreements and standards, adopted by the Queensland Government, including the Council of Australian Governments' water reform framework, progress on all projects is subject to acceptable results of environmental, economic and social assessments.

18. The Water Infrastructure Planning and Development Implementation Plan will be overseen by an inter-departmental committee, representing the Departments of Primary Industries (Fisheries Group), Environment and Heritage and Natural Resources, to ensure that a strategic approach is taken to environmental flow methodology. It will be a key forum for collaboration on monitoring, planning, impact assessment and conservation strategy development associated with water resources.

19. Identification of terrestrial and aquatic environmental values constitutes the first phase of the process to determine environmental requirements. The focus is the Government's "water infrastructure planning and development implementation plan" which recognises the need for conservation strategies to complement any new water resources development. In Queensland, such plans are incorporated by decisionmaking authorities as conditions of approvals and compliance with the requirements of an environmental management plan. The Department of Natural Resources proposes environmental management systems for all its activities and their linking to environmental management plans to provide a consistent and integrated policy approach to environmental management.

20. Another important aspect of the Plan concerns changes to and threats to certain ecosystems. The Brigalow Belt bioregion is one of the most threatened in Queensland. All twentyeight Brigalow, Blackwood, Gidgee and Boree regional ecosystems, the so-called Acacia ecosystems which occur on fertile soils, are threatened, thirteen of them being endangered and fifteen of concern. In addition, most of the softwood scrub and remnant native grassland regional ecosystems are threatened. Representation of these ecosystem types in protected areas is also poor, with considerable historical bias of the reserve system to the protection of scenic areas associated with the sandstone ranges and the less fertile soils of the region. This is partly a legacy of the unsuccessful attempts to establish large brigalow reserves in the 1960s. Belyando Shire in the northern Brigalow Belt is one of the three government areas in Queensland with the highest rate of tree clearing. The main threats come from conversion of extensive areas to intensive agriculture, as well as industrial development, which have followed widespread pastoral development over the last three decades.

21. The proposed response to protect biological diversity is through a regional conservation/environmental strategy in parallel with the development of major water resource infrastructure and expansion of irrigated lands in other areas, such as the Brigalow Belt bioregion or the Fitzroy River basin. Such parallel actions are aimed at providing a balanced approach to water resource development. This is also expected to facilitate a more efficient approach to biological diversity planning by protecting remnants of highest conservation value rather than focusing solely on issues that may be relatively less important in the vicinity of the pondage or irrigation area.

22. To set up an adequate monitoring system, a condition for allocating licences for both new and existing water entitlements would be in compliance with the provisions and requirements of a relevant approved plan. For example, managers of water projects, such as dams and weirs, would be required, by a water allocation and management plan, to develop and comply with river operations' management plans. Implementation of an approved plan will build on existing monitoring and enforcement activities. Improvements to current monitoring methods, such as more extensive measurement of water use, stream flows, river health and water quality, may be required.

23. New water users also need to demonstrate how they ~~aim~~ to access and use the resource through the development of land and water management plans. Where necessary, additional monitoring requirements can be incorporated into such plans. Annual performance auditing and reporting will be undertaken, with information made publicly available. Audit reports will be used to assess the performance of the water resource management strategies in meeting the objectives of an approved plan. A number of monitoring initiatives are underway for approved projects (e.g. Walla Weir on the Burnett River) or proposed developments (eg. Awoonga and Castlehope dams in the Gladstone region). These include monitoring a range of aquatic and terrestrial flora and fauna, water quality and associated investigations, in order to determine baseline conditions, to assess impacts of proposed structures (both construction and operation) and to enable input into environmental flow assessment. The Department of Environment and Heritage is represented on technical committees chaired by the Department of Natural Resources which managed these programs.

24. The above presented plan is still in progress and outcomes from many of the activities carried out within the project are still forthcoming. Nevertheless, the case study concludes that "this (~~the~~ integrated) approach is expected to be more strategic than previous impact assessment work based on individual assessment of development projects". The endorsement of SEA "will allow a better understanding/knowledge before decisions are made and will provide baseline/benchmark data against which to monitor biological diversity (or at least indicators) of biological diversity health".

2.3 Ways and means of fully incorporating biodiversity considerations into environmental impact assessment procedures

25. Two examples of policy and strategy frameworks which incorporates biological diversity considerations into EIA have been made available: the Canadian Guide on Biodiversity and Environmental Assessment and the

Sourcebook Update on Biodiversity and Environmental Assessment of the World Bank.

(a) A Guide on Biodiversity and Environmental Assessment

26. In November 1992, the Canadian federal, provincial and territorial ministers of the Parks, Wildlife, Environment and Forestry departments launched a process to follow-up on the Convention on Biological Diversity which involved the development of a Canadian Biodiversity Strategy. The federal Cabinet approved the Strategy in 1995 and all Canadian jurisdictions are now committed to its implementation to the extent that their resources allow.

27. The Canadian Biological Diversity Strategy's fundamental objectives are to: conserve biological diversity on a national and global scale; promote the sustainable use of biological resources; improve resource management capabilities; and develop incentives and legislation to support the conservation of biological diversity.

28. In addition, the strategy outlines strategic directions for Environmental Assessments (EAs) and mitigation to preserve biological diversity. Some of these directions are: to use EAs to determine the potential effects of development on ecosystems, species and genetic resources and recommend appropriate ways of avoiding or reducing these effects to acceptable levels; to continue to examine and develop ways of harmonizing EAs nationally and internationally, where appropriate; and to enhance efforts to identify and eliminate, or reduce to acceptable levels, the cumulative environmental effects resulting from human activities on ecosystems, species and genetic diversity. This includes developing early-warning indicators and working towards incorporating cumulative environmental effects into relevant national and international agreements.

29. In its preparation, advice on this strategy was sought from various stakeholders, including regional and urban governments, private property owners, businesses, industry, local and indigenous communities, conservation organisations, research institutions, foundations and other groups, in view of their essential role in conserving biological diversity and using biological resources sustainably.

30. The resulting document "A Guide on Biodiversity and Environmental Assessment", prepared in 1996 by the Canadian Environmental Assessment Agency jointly with the Biodiversity Convention Office, highlights the importance of biological diversity conservation, especially given Canada's ratification of the Strategy, at federal and provincial levels.

31. The guide aims at: outlining what a good EA should include and emphasizing that biological diversity is a cornerstone of EA; providing an overview of the legal responsibilities related to biological diversity under the Convention and the Strategy; providing guidance to EA practitioners in considering biological diversity within current EA approaches.

32. The guide also provides a framework for addressing biological diversity, including examples for biological diversity considerations (at ecosystem, species and genetic level) and questions that practitioners might consider during the various stages of an environmental assessment: scoping, analysis, mitigation measures, determining the significance of effects and monitoring/follow up programs.

33. Current EA processes in Canada consider biological diversity and represent a widely adopted, systematic process for integrating environmental, socio-economic, cultural and health considerations in planning and decision making. All Canadian provinces and the federal Government have legislated EA requirements for new development process and many municipalities and lands administered by native peoples have also incorporated formal requirements for the application of EA to development proposals.

(b) A Sourcebook on Biodiversity and Environmental Assessment

34. The Environmental Assessment (EA) Sourcebook Update (World Bank, October 1997) provides an introduction to the policy framework for protection or enhancement of biological diversity. It also outlines the relevant project contexts where biological diversity may be adversely impacted or, conversely, projects which offer opportunities for conserving or enhancing biological diversity and guidelines for integrating biological diversity concerns into EA.

35. The Update on Biodiversity and Environmental Assessment, which complements Chapter 2 of the EA Sourcebook, offers guidance for improved performance in undertaking EA as a means to protect the functional performance and resilience of natural habitats and ecosystems, and thereby their biological diversity, during project preparation and implementation. It includes: a list of development activities that are likely to induce significant impacts upon biological diversity; three examples - in Indonesia, Ghana and Argentina - of integrating biological diversity conservation; and a possible framework for integrating biological diversity conservation into projects including building capacity and Strategic Environmental Assessments.

36. The EA Sourcebook Update aims at providing guidance for conducting environmental assessments of proposed projects, in accordance with to the Bank's Operational Policy on EA (OP 4.01) that requires the systematic screening of all proposed programs and projects for significant environmental impacts. Through its projects, the World Bank can influence the management and protection of biological resources and promote conservation of biological diversity by promoting the application of EA during project preparation, appraisal, and implementation.

37. The report concludes that the Bank can also support the development of local expertise in methodologies, study techniques and procedures, analysis and case studies to enhance the practice of EA. This may be achieved in developing countries by supporting workshops and seminars on current

research and techniques in biological diversity conservation and helping develop training facilities through research exchange programs.

2.4 Reports and case studies relating to environmental impact assessment in the thematic areas under the CBD, including activities with transboundary implications and environmental impacts having cumulative effects on biological diversity

38. The three case studies presented under this item were submitted by the Australian Government and refer respectively to marine and coastal, inland waters and transboundary implications. They also address socio-economic elements [para.1(a), dec.IV/10(C)].

(a) Naval Armaments Complex at Point Wilson

39. The first case study considers the assessment of a proposal to construct explosive facilities, an administration complex, a 2000-metre-long causeway, jetty and wharf structure, and dredging of some 1.7 million cubic metres of spoil for the Naval Armaments Complex at Point Wilson, Port Phillip Bay, Victoria.

40. The regional environment includes coastal wetlands listed under the Ramsar Convention, as well as seagrass and marine communities. The coastal and nearshore environment is important for migratory bird species listed under international treaties. Saltmarsh within the region provides winter migratory habitat for the endangered Orange-bellied Parrot (only several hundred of which remain in the wild in Australia). Because of the environmental significance of the region, the proposal was examined at the level of a Commission of Inquiry under the Commonwealth Environment Protection Act of 1974.

41. To assist in developing an assessment approach for ecologically sustainable development, the Commission convened a workshop with invited stakeholders and experts. Taking into account the outcome of this workshop, the Commission's assessment approach was developed along the following lines:

- a) detailed examination of the existing environment to identify areas of conservation significance and environmental constraints (including contribution to biological diversity at the regional level);
- b) identification of the proposal's impacts, ranking of their significance and assessment against the above attributes, including modifications needed to the proposal to maximise protection of biological values;
- c) consideration of the proposal and its impacts at the regional level, over a 50-year time span, and taking into account cumulative impacts from existing and likely developments;
- d) recognition of economic significance of environmental attributes (e.g. seagrass beds for fishing), and the need to ensure that the costs

of protection measures were commensurate with the scale of impacts;
and,

e) identification of management measures needed to ensure conservation of key resources over time, including a regional management approach.

42. The Commission recommended specific measures for environmental enhancement (such as predator-proof fencing of saltmarsh, changes to road culverts to restore natural flows, and introduction of a natural grazing regime) and habitat compensation. The latter was accomplished through the creation of artificial wetlands in an adjacent saltfarm to compensate for disturbance to migratory birds during the construction phase. The Commission also recommended measures to set in place a comprehensive monitoring and management regime, including acceptability limits for environmental impacts from dredging on seagrass and birds through construction noise and timing. The mechanism for this was an agreed environmental management plan, subject to expert and community oversight. The plan specified all monitoring requirements, including environmental parameters not to be exceeded, and was aimed at ensuring that key habitats and biological relationships of importance at the regional level were protected.

43. The Commission found that a lack of consistency prevails in current biological diversity assessment which inhibits comparison and evaluation. It concluded that a need exists to adopt standards for biological diversity assessment throughout Australia, including data collection and interpretation, and to build databases that are publicly accessible. Over time, this would ensure that data collection for environmental impact assessment purposes will be consistent and will contribute to the overall state of knowledge.

(b) Woolpunda Groundwater Interception Scheme

44. The second case study reports on EIA carried out on the State Government proposal by the South Australian Engineering and Water Supply Department: the so-called Woolpunda Groundwater Interception Scheme. The proposal was to reduce saline groundwater inflow to the River Murray by a series of 47 high yielding bores and an underground pipeline system which would be used to pump saline water away from the river to an inland disposal basin. This section of the Murray River has an unusually high increase in salinity per kilometre which, owing to the relative absence of irrigation schemes in the area, has been attributed to natural inflow of saline groundwater. As a result, the salinity problems could not be solely addressed by improving irrigation practices.

45. An Environmental Impact Statement was prepared under the South Australian Planning Act of 1982, and placed on public exhibition. In the Statement, twenty-five alternative disposal basins were investigated and subsequently three options were selected for examination during the environmental assessment process. The process aimed to assess the potential impacts of each option on: the quality of the water of the river Murray; the aquifer system in the long term; users of the water, including urban, industrial and local irrigators; the biological environment, especially

native vegetation and wetlands; and the cultural environment, with emphasis on aboriginal heritage and visual amenity.

46. The ecological effects' parameter looked at the area and state of vegetation affected and its ability to create a beneficial wetland, which relied heavily on the predicted salinity of the ponded water. Vegetation was to be affected in the disposal basin area, borrow pits, areas of surface salinisation and areas of saline perched groundwater where the water table was within 2.5 m of the surface. The vegetation was categorised into classes of significance of impacts: native vegetation with tree canopy and understorey intact; disturbed area with tree canopy and no understorey; areas of regrowth or where native vegetation has been recently rolled in preparation for clearing; and agricultural vegetation (i.e. crop pasture and including areas which are grazed but are still wooded with thinned tree cover).

47. The draft Environmental Impact Statement was considered to be not sufficiently comprehensive. Therefore, after requests in both the State Government agency and public submissions, a Supplement was prepared which addressed most of the issues raised and was released to the public. The Supplement provided more information, *inter alia*, on rare and endangered plant and animal species, extent of the native vegetation and status of each basin as a wildlife refuge area or corridor.

48. As a result of the assessment process, the Stockyard Plain Disposal Basin Reserve has been established in an area with a long history of land clearance for cropping and grazing activities, where native vegetation was in a degraded state. The objectives of the management plan for the Stockyard Plain Disposal Basin can be summarised as follows: control of weeds and vermin; prevention of bushfire; preservation of wildlife and of structures; encouragement of public interest; revegetation; reserve enhancement; and statutory requirements. The implementation of this plan commenced with activities such as: removal of stock; planting and direct seeding to stabilise dunes; feral animal (fox and rabbit) control; and the publication of pamphlets for public information. These actions have substantially improved the natural habitat value of the surrounding vegetation. Involvement of the local community in the management of the reserve has been successful.

49. The Basin has made substantial changes to the ecology of the site. The changes include a loss of existing dryland mallee habitat through salinisation and waterlogging, and the creation of a large aquatic habitat. The Basin has been colonised by a number of aquatic plant species and has become home to some 100 bird species. Whilst data in relation to salinity and effectiveness of the Stockyard Plain Basin has been collected regularly since commissioning, it has only been since the implementation of a management plan for the reserve that ongoing regular monitoring of flora and fauna, both aquatic and terrestrial, has been undertaken. It is expected that monitoring will continue on an annual basis.

50. The third case study considers the construction and operation of a 2,575-kilometre pipeline which will transport natural gas from Kutubu in Papua New Guinea, across the Torres Strait to Gladstone, Queensland, Australia. In accordance with the Administrative Procedures under the Environment Protection Act of 1974, the Federal Minister of the Environment directed the proponents to prepare an Environmental Impact Statement (EIS) and an Impact Assessment Study (IAS). The Australian and Papua New Guinea Governments entered into a Memorandum of Understanding to address environmental matters arising from the pipeline project and the Torres Strait Protected Zone Treaty between the two countries.

51. The Australian environmental assessment process was undertaken jointly by Commonwealth and State jurisdictions in order to prevent duplication. Coordination of the assessment was facilitated by meetings of advisory bodies, consisting of government and non-government agencies, held at significant milestones of the assessment process. Consultation was also conducted with affected Aboriginal and Torres Strait Islanders; this resulted in the Heads of Agreement signed by the company and affected indigenous groups.

52. The joint EIS/IAS was released for public review and comments were received on a variety of issues. The main concerns pertaining to biological diversity were: the offshore route alignment; impacts on endangered turtles at the shore crossing; the route alignment through Cape York which was listed on the Register of the National Estate; the identified wilderness area of Kimba Plateau, and wild rivers; proximity of the pipeline route to habitats of endangered species and bat nursing caves; and the potential for invasive species of weeds and tree dieback fungus (Phytophthora cinnamomi) to gain a foothold along the pipeline route.

53. Sensitive environmental areas have been identified and recorded on a geographical information system. Recommendations have been made that the pipeline not be constructed within proximity to those locations. Impacts on crucial breeding seasons for turtles is to be avoided by undertaking construction work according to a specific time frame. Further work is to be undertaken on an Environmental Management Plan to minimise the potential impacts of invasion and translocation of weeds, water born organisms, and the tree dieback fungus Phytophthora cinnamomi.

54. Despite the limited quantitative information submitted in the above three case studies, this summary underscores the appropriateness of using those reports that list protected or endangered sites/species (such as the list of Ramsar on Wetlands of International Importance or the previously mentioned IUCN Red Data Book) as a source for preliminary assessment on the biological diversity of specific areas. Once again, participation in the assessment of interested or affected stakeholders, including indigenous and local communities, proves to be extremely important in order to focus consideration on the safeguard of biological diversity aspects. The existence of common standards on biological diversity is very important, with particular reference to data collection, to ensure comparison and evaluation of biological diversity values, at least within country boundaries.

2.5 Reports relating to existing legislation, experience with environmental impact assessment procedures and guidelines, particularly

with regard to the incorporation of biological diversity considerations into environmental impact assessment

55. Six cases have been included under this item: (a) a case of land management submitted by Australia; (b) the Government of Namibia's EIA Policy; (c) the sultanate of Oman report on EIA guidelines; (d) the EIA legislation in the Dominican Republic; (e) the document "Guidelines for Environmental Assessment and Traditional Knowledge", submitted by the Canadian International Development Agency (CIDA), and (f) information on environmental law activities related to EIA carried out by the United Nations Environment Programme (UNEP).

(a) Clearing of native vegetation at Victoria Location, 10598 Cockleshell Gully Road, Shire of Dandaragan

56. This Australian case study considers the assessment carried out by the Environmental Protection Authority (EPA) on a proposal to clear 870 hectares of native vegetation in Western Australia. In its report, EPA concluded that, although the majority of the vegetation types on the property appeared to be also represented in existing conservation areas, in view of the species richness and endemism of the vegetation in the region it was appropriate, from a biological diversity perspective, to retain the vegetation on the property.

57. In assessing the proposal, EPA took into consideration the following recent Western Australian State Government initiatives in relation to the broad question of biological diversity and its relationship to land clearing. The Remnant Vegetation Policy restricts clearing in agricultural areas if deep-rooted perennial vegetation would reduce such clearance to less than 20% of the property area. Clearing is also discouraged where total remnant vegetation within a subcatchment or local government authority area is less than 20%. The National Strategy for the Conservation of Australia's Biological Diversity, established by the Commonwealth Government, ensures that effective measures are in place to retain and manage native vegetation, including controls and clearing. The Commonwealth's National Reserve System Program, under the Natural Heritage Trust, has, as its primary goal, the establishment of a comprehensive, adequate and representative system of protected areas to conserve Australia's native biological diversity.

58. Land clearing proposals in agricultural areas of Western Australia have been assessed by EPA in accordance with the "Memorandum of Understanding (MOU) for the protection of remnant vegetation on private land in the agricultural region of Western Australia". The MOU was prepared in furtherance of a direction by State Cabinet which recognised that, under the provisions of the Soil and Land Conservation Act, the Wildlife Conservation Act, the Conservation and Land Management Act and the Country Areas Water Supply Act, there is no jurisdiction over certain natural resource conservation issues. Furthermore, the MOU recognised the importance of retaining remnant native vegetation to control land degradation and maintaining biological diversity values. It was intended to clearly identify assessment procedures to ensure that land clearing proposals were treated expeditiously, while still meeting

the requirements of relevant legislation and authorities in one streamlined process.

59. In order to ensure that land clearing proposals were treated expeditiously, while meeting the requirements of relevant legislation and authorities, a system was established through the MOU whereby land clearing proposals proceed through three levels of assessment, with unacceptable proposals being identified early in the process. The third level review involved the establishment of a working group which required a scheduled regular meeting of representatives of the relevant government departments involved in the MOU, namely: Agriculture, the Department of Conservation and Land Management, the Waters and Rivers Commission, and the Department of Environmental Protection on behalf of EPA. Proposals which are likely to raise conservation issues are brought to the attention of this working group and are referred, when considered necessary, to EPA for assessment.

60. As part of the assessment, EPA has been developing a basis for considering biological diversity issues where a proposal involves extensive clearing of native vegetation. The document "Environmental evaluation of native vegetation in the wheatbelt of Western Australia - principles and criteria used to appraise land clearing proposals", prepared for the Department of Environment Protection, elaborates on the principles and criteria used by EPA during its assessment.

61. The assessment of individual proposals by EPA has proved to be difficult and time consuming without detailed botanical knowledge of the vegetation types proposed to be cleared, its representation in existing conservation reserves, and whether flora and/or fauna protected by State Government or Commonwealth legislation is present in the area. This level of detailed knowledge is obviously essential in order to protect biological diversity values. The EPA and the Department of Environment Protection are continuing to work closely with other State Government agencies to improve this assessment process.

62. In this case study, EPA recommended that the vegetation proposed to be cleared be retained because of its biological diversity value. This has been useful in that it provides a clear indication of the need to consider biological diversity values as a real issue when assessing land clearing proposals. Nevertheless, the case study concludes by stating that "in this specific case, EPA has been criticised for not taking into consideration social equity issues as well as economic implications". Therefore, while the EP is not required to take economic factors into consideration in its assessment, there is a need, according to this case study, for the Government to address the issue of financial compensation if clearing applications continue to be refused on biological diversity grounds.

(b) Environmental Assessment Policy of Namibia

63. The Environmental Impact Assessment Policy of Namibia aims at promoting sustainable development and economic growth while protecting the environment in the long term. In the Preamble, the Government of the Republic of Namibia recognises that: "The State shall actively promote and maintain

the welfare of the people by adopting policies aimed at the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future" [Constitution of the Republic of Namibia - Art.95 (1)]. Furthermore, it is declared that Namibia shall, inter alia, place a high priority on:" maintaining maximum biological diversity by ensuring the survival and promoting the conservation in their natural habitat of all species of fauna and flora, in particular those which are endemic, threatened, endangered, and of high economic, cultural, educational, scientific and conservation interest". The major mechanism for coordinating and reviewing assessments and implementing this policy is a Sustainable Development Commission (SDC), which consists of numerous technical subgroups and is to be established in 1999.

(c) Oman report on Impact Assessment and Minimising Adverse Impacts

64. The sultanate of Oman reports on EIA guidelines developed by the Directorate General of Nature Conservation which apply to each sector of development that may impact on conservation of natural resources, including natural and traditional landscapes, as well as all rural areas within and outside designated protected areas. These guidelines also include: oil prospecting, minerals exploitation, road building, land allocation and housing development, agriculture, coastal and marine sites, electricity and water distribution, tourism, telecommunication sites and military training exercises. In addition, specific designated protected areas, such as the Arabian Oryx Sanctuary, have their own planning guidelines developed to meet the needs of the area. The guidelines address impacts on social, cultural and economic conditions of local and indigenous communities.

(d) Evaluation and Control of Environmental Impacts in the Dominican Republic

65. In the Dominican Republic, EIA legislation mainly focuses on tourism, including projects that may have an impact on the landscape or on marine and coastal resources. In 1992, through a legislative decree, a legal framework was established to follow up the agreements adopted at UNCED (Rio, 1992). The so called "Proyecto Capacidad 21" intends to create a participatory process between the public and private sectors in order to address the social, economic and environmental aspects for sustainable development. Within this project, the Dominican Government has recently set up the Environmental Protection Institute, responsible to carry out and implement the EIA policy.

(e) Guidelines for Environmental Assessments and Traditional Knowledge

66. The document "Guidelines for Environmental Assessments and Traditional Knowledge", submitted by CIDA, is a report from the Centre for Traditional Knowledge to the World Council of Indigenous People, funded by CIDA and Environment Canada. It represents a prototype that can be used by project planners at the operational level. It is aimed at presenting how indigenous people, governments and the private sector can work together to ensure that development projects and environmental assessments properly

respect and acknowledge indigenous knowledge and the people who hold it. The guidelines are meant as a foundation upon which indigenous people, governments and industry can gain a more complete understanding of each others' positions.

67. Although in many countries legislation requires the assessment of potential environmental impact, it is rare that traditional knowledge is included as part of the environmental assessment. The guidelines suggest a framework within which managers of environmental assessment and development planning projects can ensure appropriate inclusion of indigenous people and their traditional knowledge as part of the process. Although there are many stakeholders in any project involving the environment, for the purposes of these guidelines three major parties are involved in the process: the government regulatory agency; the proponent of the project; and indigenous people.

68. Prior to releasing the guidelines for use on actual projects, the project team considers it important to test them in mock development projects during a series of six workshops to be held around the world. Planning for these activities is just beginning; thus sites have not yet been chosen nor have the required funds been secured.

(f) Environmental Law Activities carried out by UNEP on Environmental Impact Assessment

69. The environmental law activities of UNEP related to EIA include: advisory services provided to Ethiopia, Mauritania and Oman on the development of EIA legislation; publication of EIA legislation in the Compendium of Environmental Laws of African Countries (volume 1, including supplements for 1997 and 1998); and the anticipated publication of a report on the harmonization of EIA legislation in East Africa (Kenya, Tanzania and Uganda). The last two activities have been undertaken in the context of the UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa funded by the Government of the Netherlands.

70. The Economics, Trade and Environment Unit (ETEU) of UNEP is also conducting EIA work. This includes: further dissemination of two publications entitled "UNEP EIA Training Resource Manual" and "EIA: Issues, Trends and Practice"; trials of the training manual; EIA capacity building in Hungary, Uganda and Vietnam; an anticipated compendium of case studies; participation in a national workshop on EIA in Oman; involvement in an EIA capacity building project in Mauritania (funded by the Federal Republic of Germany); and participation in the 1998 International Association for Impact Assessment (IAIA) Conference.

71. From the reports presented above the following conclusions can be drawn. First, the importance is highlighted of adopting an integrated

ecosystem approach (e.g. through MOU) and that the achievement of a common satisfactory goal requires collaboration between different administrative bodies. On the basis of a common understanding the assessment process can be enhanced by eliminating the "identified unacceptable proposals early in the process". Again, the lack of detailed knowledge constitutes an impediment in carrying out assessments. Although the requirement to assess biological diversity may not be explicit in the EA legislation of countries, it is implicit in the term "environment" which includes several resources (such as land, water, air, organic and inorganic matters, living organisms, etc.) that do constitute biological diversity. Nevertheless, there may be a need to ensure attention to biological diversity in EIA through developing guidelines on the identification and consequential incorporation of biological diversity considerations into EIA practices. Initiatives like that of CIDA in developing guidelines for EIA and traditional knowledge are of great relevance in the frame of the CBD process on biological diversity and impact assessment and should be supported.

2.6 Reports concerning the implementation of mitigating measures and incentive schemes to enhance compliance with existing national environmental impact assessment systems

72. The EIA process usually includes elements that act as mitigating and incentive measures. The EIA process aims at eliminating or at least minimising potential adverse impacts that may affect the environment. The predictable effects of a project can be mitigated through appropriate actions that include, *inter alia*: the application of design; changes in planning; project management; and measures to restore or rehabilitate ecosystems and to recreate habitats and valued resources. The possible link between impact assessment and incentive measures is pointed out in COP decision III/18 on Incentive measures. In paragraph 6 of that decision, COP encourages Parties to incorporate biological diversity considerations into impact assessments as a step in the design and implementation of incentive measures.

73. On this assumption many of the case studies considered above can be also dealt within this category.

74. At the meeting held at IUCN headquarters in December 1998 among CBD and partner organisations, as outlined in paragraphs 75 to 87 below, links between decision IV/10 A) (Incentive measures) and (C) (Impact assessment) were analysed. The outcome of the meeting led to the conclusion that 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. In this respect, the role of SEA was emphasised. EIAs often address only a limited range of alternatives and mitigation measures, largely reacting to development proposals, rather than proactively anticipating them, since they usually take place once many strategic decisions have already been made. SEA, on the contrary, incorporates environmental issues into project planning by influencing the context within which project decisions are made and allowing the consideration of alternatives or mitigation measures that go beyond the confines of individual projects.

III. COLLABORATION WITH OTHER INTERNATIONAL ORGANISATIONS AND RELEVANT INFORMATION SUBMITTED BY THOSE ORGANISATIONS

75. Paragraph 6 of COP decision IV/10 (C) encourages the Executive Secretary to initiate collaboration between CBD and other international organisations and bodies with expertise in the impact assessment field and to seek co-operation, in particular with the Convention on Wetlands of International Importance, especially as Waterfowl Habitat and the Bonn Convention on the Conservation of Migratory Species, with the World Conservation Union (IUCN) and the International Association for Impact Assessment (IAIA), with a view to drawing on their networks of professional expertise and sources of information and advice.

76. For this purpose, a meeting was held in Gland, Switzerland, at IUCN headquarters (15-17 December 1998) among the abovementioned organisations and the Organisation for Economic Cooperation and Development (OECD), in view of its partnership with CBD on incentive measures. On this occasion, the various representatives presented relevant work carried out by their organisations or in progress. The Convention and the partner organisations agreed that there are opportunities over the next years to make joint progress on this issue. This first meeting forms the basis for subsequent discussions and opportunities for co-ordination and collaboration. The report of the meeting is available on the Internet at:
<http://economics.iucn.org/98-12-00.htm>

77. The Convention on Wetlands addressed impact assessment at its very first conference, Recommendation 1.6 of which states: "...In case of any projected large scale wetland transformation, the decision is not taken until an assessment of all the values involved has been made, and that ecologists be included in the planning process". Subsequently, paragraph 2.5 of Annex to Recommendation 2.3 (Groningen, 1984) considers the evaluation of environmental effects and involvement of ecologists in the development of plans before decisions are taken which would significantly transform wetlands. As outlined below, EIA has been considered a major item in the work of the Convention.

78. The concept of "wise use", as the mainstream doctrine of the obligations of the Convention on Wetlands, is perhaps the primary "home" for a consideration of how environmental assessment may assist the Convention's aims. The Annex to Recommendation 3.3 of the conference stated that: "Wise use involves the promotion of wetland policies containing the following elements: ... (d) proper assessment of environmental impact before development projects are approved, continuing evaluation during the execution of projects, and full implementation of environmental conservation measures which take full account of the recommendations of this process of environmental assessment and evaluation". Recommendation 4.10 further suggested that the Wise Use Working Group be reconstituted, in order to further develop and refine the wise-use guidelines in areas including: "organisational and institutional processes, development of management plans, policies and alternative conservation strategies"; and in order to provide information about "the process of developing national wetland ... policies".

79. Resolution 5.6 further advised that general legislation for wetlands should consider "execution of an environmental impact assessment in order to determine if a proposed project is compatible with the general requirements of wise use and the maintenance of the ecological character of the wetlands concerned. Special rules relating to the contents of an environmental impact assessment will be needed in order to ensure that no important factor specifically related to wetlands is overlooked. The cumulative effects of separate projects should also be taken into consideration". Moreover, "environmental impact assessments should also be prepared not only for activities and projects in the wetlands concerned but also for activities outside these areas when they may have a significant effect on wetlands. Environmental impact assessments should also cover the long-term effects of proposed activities, projects, plans and programmes, as well as interactions between all components of the water system at the catchment level". Further, legislation for the conservation and wise use of specific wetland sites (e.g. designated Ramsar sites) should consider "application of special environmental assessment rules to these areas in view of their particular environmental sensitivity and submission of activities which may have adverse effects on the area, to environmental impact assessment or to other forms of evaluation. Such activities should only be authorised when the evaluation has shown that no significant damage to the area will occur".

80. Impact assessment and minimizing adverse impacts is one element of the CBD-Ramsar Joint Work Plan endorsed in COP decision IV/15. "The Ramsar Convention and Impact assessment: strategic, environmental and social", will be discussed under Technical Session IV on "Tool for assessing and recognising wetland value" at the seventh meeting of the Conference of the Contracting Parties to the Convention on Wetlands, to be held in San José, Costa Rica, 10-18 May 1999.

81. The Convention on the Conservation of Migratory Species of Wild Animals has given rise to various agreements and Memoranda of Understanding (MOU) in which EIA has been established as an aspect of the conservation of migratory species and their habitat. In this context, it should be noted that agreements and MOU for migratory species or groups thereof can be tailored according to conservation management needs.

82. The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), in section 4.3 "Other human activities", includes the assessment by Parties of the impact of proposed projects which are likely to lead to conflicts between certain biological populations and human interests and the need to make the results of such assessments available to the public. AEWA is expected to enter into force in 1999.

83. In paragraph 1 (Adoption and enforcement of national legislation) of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), sub-paragraph (c) reads: "Parties shall..require impact assessments to be carried out in order to provide a basis for either allowing or prohibiting the continuation of the future development of activities that may affect cetaceans or their habitat in the agreement area, including fisheries, offshore exploration and exploitation, nautical sports, tourism and cetacean watching, as well as

establishing the conditions under which such activities may be conducted". ACCOBAMS is expected to enter into force in 1999.

84. In the action plan attached to the Draft Memorandum of Understanding on the Conservation and Management of the Middle European Population of the Great Bustard (*Otis tarda*), under "General", paragraph 1.3.2 "Other activities resulting in habitat fragmentation", reads "The construction of new roads or highways and railways, and the planting of shelter belts and irrigation, should be avoided as far as possible in Great Bustard areas. All these and other infrastructure measures should be subject to environmental impact assessments which should consider viable alternatives and take into account the special sensitivity of the Great Bustard to disturbance and habitat encroachment. Fences should either be avoided or constructed in a way that permits the free movement of birds. This draft MOU is at present subject to consultation with the responsible ministries of range-state governments; the reactions received so far are entirely consenting. The CMS Secretariat expects to circulate the final proposal of the MOU for signature in Spring 1999.

85. Concerning the Draft Agreement for the Conservation and Management of the Asiatic Houbara Bustard (*Chlamydotis undulata macqueenii*), a drafting group of range-states' experts is presently elaborating an action plan which will include a paragraph of the same sort as the one that has been included in the above MOU.

86. The World Conservation Union (IUCN) engagement in biological diversity and impact assessment is to be traced back to 1997, when the discussion document on "Biodiversity and Impact Assessment" was prepared at the occasion of SBSTTA-3. Since then, IUCN has been working on this topic in close collaboration with IAIA. IUCN established an Internet site on biological diversity and impact assessment ([http:// economics.iucn.org/assessment](http://economics.iucn.org/assessment)) which houses papers, case studies, workshop details, links and other information relating to this topic, many of which have been of great interest and assistance to the CBD in the production of this synthesis report.

87. The International Association for Impact Assessment (IAIA), was established in 1980. Its members are researchers, practitioners, and users of various types of impact assessment from all parts of the world. IAIA members number more than 2,500 and represent more than 100 countries. An international conference is held annually; the 19th annual Conference will be held in Glasgow, Scotland, 15-19 June 1999. Regional conferences are organised to make information exchange and networking opportunities available to those who might not be able to attend the international conferences, as well as to focus attention to specific issues. Training programs are held regularly in conjunction with IAIA international conferences; these range from one day to one week in duration and deal with a variety of impact assessment issues. The quarterly journal on "Impact Assessment and Project Appraisal" contains a variety of peer-reviewed research articles, professional practice ideas, and book reviews. Finally, the IAIA newsletter, published four times annually, provides members with current information concerning association activities and events. In conjunction with IUCN, IAIA has established a biological diversity task force. Workshops on issues relating to biological diversity and impact

assessment will take place at the forthcoming meeting in Glasgow and at subsequent IAIA meetings.

IV. CONCLUDING REMARKS AND RECOMMENDATIONS

88. Although the environmental impact assessment process is in place and applied in many countries, this rarely incorporates biological diversity considerations. On the other hand, work on biological diversity and impact assessment is in process and is being implemented by Parties and relevant organisations (for example a workshop on "biological diversity and impact assessment in Central Africa" will be held in Cameroon, 30-31 March 1999). Impact assessment will be analysed at the forthcoming-7COP the Convention on Wetlands (San Jose, May 1999); at the sixth meeting of COP of CMS (Capetown, November 1999); at COP-2 of the Convention on International Trade of Endangered Species (CITES) (Nairobi, April 2000); and at the fifth COP of United Nations Framework Convention on Climate Change (UNFCCC) (Hamman, October 2000).

89. The case studies and other information submitted to the Executive Secretary and presented in this note are not sufficient, either in number or in their degree of detail, to reach definitive conclusions about the present status of incorporation of biological diversity considerations into environmental impact assessment procedures. The present report should be considered as the initial step in covering this issue. The analysis of information should be continued by the Executive Secretary, on the basis of additional submissions, in order to achieve a representative and reliable evaluation, and allow the development of guidelines on the incorporation of biological diversity considerations into EIA.

90. On the basis of the above case studies the following preliminary conclusions can be drawn:

- a) Impact assessments on biological diversity should address actual and potential effects of development activities and projects on ecosystems, species and genetic resources, as well as effects on functional performance and resilience of natural habitats and ecosystems.
- b) The value is highlighted of Strategic Environmental Assessments which consider the overall environmental policy context instead of focusing on individual projects and/or resources. These should address conservation and sustainable use of biological diversity and ecosystems, taking into account traditional knowledge.
- c) The lack of scientific data on the status and trends of biological diversity, including information regarding threatened and endangered species and their habitats, constitutes a serious limitation in carrying out such assessments.
- d) Continuous monitoring is required through baseline/benchmark data and indicators (including key species and habitats and indicators that provide early warning of potential threats), to measure impacts on biological diversity, ecosystem processes and interactions. It should

also consider cumulative environmental effects resulting from human activities on ecosystems, species and genetic diversity. The results and databases should be made publicly available.

- e) As already pointed out by DIVERSITAS, some adverse impacts may be wide ranging and have effects beyond the limits of particular ecosystems or national boundaries. Therefore, environmental management plans and strategies should consider regional and transboundary impacts, and provide the basis for consistent and integrated approaches. They may be backed up by legislation and incentive measures, including measures to restore or rehabilitate ecosystems and to recreate habitats and biological resources.
- f) Proposed programs and projects that may have a potential negative impact on biological diversity should be systematically screened from the earliest stage of the proposal and including subsequent stages of the development process. Such assessments should provide early warning of incipient problems rather than assessing damage at a stage where it may already be irreversible.
- g) In all stages of the assessment process, the involvement of interested and affected stakeholders should be ensured, including governmental bodies, the private sector, research institutions, indigenous and local communities and non-governmental organisations, through the use of participatory approaches.
- h) There is an urgent need for capacity building, including the development of local expertise in rapid assessment methodologies, techniques and procedures, to permit, at the very least, the identification of impacts of major importance on biological diversity.

Recommendations

91. In paragraph 3 of decision IV/10(C), COP instructed the Subsidiary Body on Scientific, Technical and Technological Advice to identify further actions that would promote implementation of the impact assessment procedures requested by Article 14 of the Convention, including consideration of whether there is a need for additional work to develop guidelines on the incorporation of biological diversity considerations into environmental impact assessment, and to report to the Conference of the Parties.

92. On the basis of this synthesis report, SBSTTA may wish to consider:

- a) whether there is a need for additional work to develop guidelines on the incorporation of biological diversity considerations into environmental impact assessment. If so, SBSTTA could request the Executive Secretary, in collaboration with partner organisations, as well as other relevant organisations such as DIVERSITAS, to develop draft guidelines for its further consideration;

- b) requesting Parties and Governments to include in their National Reports detailed information on impact assessments specifically carried out in order to protect their countries' biological diversity;
- c) requesting the Executive Secretary to compile a roster of experts on biological diversity impact assessment on the basis of inputs from Parties and, as appropriate, from other countries and relevant bodies. In this respect, SBSTTA may wish to consider the expertise achieved by IAIA in this field and to draw on its network of professional experts;
- d) taking into consideration the results of any further relevant meetings held prior to SBSTTA-4 by other international organisations, particularly, COP-7 of the Convention on Wetlands and the 19th IAIA international conference;
- e) encouraging the use of Strategic Environment Assessment in order to assess impacts not only of individual projects but also of cumulative and global effects, incorporating biological diversity considerations at the decision making/environmental planning level; and
- f) encouraging the use of the precautionary approach when addressing impact assessment on biological diversity.