

Annex I

RECOMMENDATIONS ADOPTED BY THE SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE AT ITS FOURTH MEETING

IV/1. Programme of work

A. Progress in the work programmes on thematic areas

The Subsidiary Body on Scientific, Technical and Technological Advice,

1. Notes with appreciation the progress made in implementing the programmes of work on marine and coastal biological diversity, agricultural biological diversity and the biological diversity of inland water ecosystems, as described in the note by the Executive Secretary (UNEP/CBD/SBSTTA/4/3);
2. Notes that limited progress has been made on the implementation of the programme of work on forest biological diversity, as contained in decision IV/7 of the Conference of the Parties, on forest biological diversity;
3. Notes that limited progress has been made in the development and implementation of indicators, as called for in decisions III/10 and IV/1 A of the Conference of the Parties;
4. Urges the Executive Secretary to promote the implementation of the programme of work on forest biological diversity in accordance with decision IV/7, and report to the Subsidiary Body on Scientific, Technical and Technological Advice at its fifth meeting on progress made, as well as actions required for its future development;
5. Notes with appreciation the contribution of the Food and Agriculture Organization of the United Nations to the thematic work programmes and welcomes the results of the Workshop on Sustaining Agricultural Biodiversity and Agro-Ecosystem Functions, held in Rome from 2 to 4 December 1998, and of the Workshop on the Conservation and Sustainable Use of Pollinators in Agriculture, with an Emphasis on Bees, held in Sao Paulo, Brazil, in October 1998;
6. Agrees that physical degradation and destruction of coral reefs also pose a significant threat to the biological diversity of these ecosystems and therefore recommends that the Conference of the Parties expand its request to the Subsidiary Body on Scientific, Technical and Technological Advice, as contained in paragraph 1 of its decision IV/5, so as to include the effects of such activities in addition to the analysis of coral bleaching and urges the Executive Secretary to make rapid progress on the issue of coral bleaching;
7. Recommends that education and public awareness, referred to in Article 13 of the Convention on Biological Diversity, be included in the discussions on the work programmes on thematic areas;

/...

8. Recommends to the Executive Secretary that, in preparing reports of progress in programmes of work for the Subsidiary Body on Scientific, Technical and Technological Advice at its fifth meeting, special emphasis be given to identify limitations and propose measures to improve their implementation.

B. Cooperation with other bodies

The Subsidiary Body on Scientific, Technical and Technological Advice

1. Agrees that the experience of the Intergovernmental Panel on Climate Change and the United Nations Framework Convention on Climate Change and the Assessment Panels under the Montreal Protocol on Substances that Deplete the Ozone Layer provide useful lessons for the operation of the Subsidiary Body on Scientific, Technical and Technological Advice,

2. Invites the Executive Secretary, in the light of decision IV/16 of the Conference of the Parties on, inter alia, the terms of reference for the ad hoc technical expert groups and the programme of work of the Subsidiary Body, to prepare for the fifth meeting of the Conference of the Parties a detailed proposal that seeks to address the issues of peer review and scientific assessments for the Convention on Biological Diversity, drawing on the experience of the United Nations Framework Convention on Climate Change and the Montreal Protocol on Substances that Deplete the Ozone Layer;

3. Invites the Executive Secretary, within the proposal referred to in paragraph 2 of the present recommendation, to consider:

(a) How any mechanism would relate to rosters of experts, the ad hoc technical expert groups and the liaison groups;

(b) The relationship between any proposed assessment and existing assessments of relevance;

(c) Developing guidelines on the responsibilities and selection of lead authors, contributors and expert reviewers, as well as procedures for the approval of a variety of types of reports, which draw upon the contributions and experts of Parties;

(d) Using existing facilities, for example, technology centres, universities and relevant organizations and processes;

(e) Ensuring access to appropriately qualified individuals suitable for producing reports that can be used by the Subsidiary Body;

(f) Making a commitment to invest time and resources in the maintenance, continuation and advancement of the assessment;

(g) Seeking support by government authorities and institutions for personnel involved in assessment;

/...

4. Welcomes the results of the seventh meeting of the Conference of the Parties to the Convention on Wetlands and accepts the invitation of the Conference of the Parties to that Convention to designate the Chair of the Subsidiary Body on Scientific, Technical and Technological Advice as a permanent observer on the Scientific and Technical Review Panel of the Convention on Wetlands;

5. Welcomes also the forthcoming reviews of the joint work plan by the Scientific and Technical Review Panel and the Standing Committee of the Convention on Wetlands and agrees to consider their proposals at its next meeting;

6. Acknowledges the usefulness of the notification systems used by the Convention on Wetlands and the Convention on International Trade in Endangered Species of Wild Fauna and Flora;

7. Invites the Executive Secretary to enhance communication with Parties by introducing a notification system for the Convention on Biological Diversity with respect to documents received, selection of experts for technical panels and liaison groups and the peer-review processes initiated by the Executive Secretary, and to make such information available through the clearing-house mechanism save to the extent that an expert objects to the release of information concerning him/her;

8. Recommends increased cooperation on scientific, technical and technological advice between the Convention on Biological Diversity and other relevant international conventions/agreements important for achieving the objectives of the Convention on Biological Diversity and, to that aim, also recommends that the Conference of the Parties consider the development of the modalities for more direct types of cooperation between the Subsidiary Body on Scientific, Technical and Technological Advice and parallel bodies under these conventions/agreements;

9. Invites the Executive Secretary to enhance cooperation with scientific, technical and technological organizations and to consider modalities to promote such cooperation.

C. Proposal on draft programme of work for the Subsidiary Body on Scientific, Technical and Technological Advice

The Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling decision IV/16 adopted by the Conference of the Parties to the Convention on Biological Diversity at its fourth meeting,

Having considered its programme of work based on the priorities set out in annex II to decision IV/16, with a view to streamlining and focusing the agendas of its future meetings,

1. Proposes to the Conference of the Parties that it adopt the longer-term programme of work of the Subsidiary Body on Scientific, Technical and Technological Advice, as contained in the annex to the present recommendation, and recommends the preparation of a strategic plan to guide its implementation;

/...

2. Recommends that a consideration of the interests of indigenous and local communities embodying traditional lifestyles be included in the consideration by the Subsidiary Body on Scientific, Technical and Technological Advice of each of the topics described in the programme of work contained in the annex to the present decision;
3. Decides to apply the programme provisionally for the period between its present meeting and the fifth meeting of the Conference of the Parties;
4. Notes that the inter-sessional meeting on the operations of the Convention, to be held in Montreal from 25 to 30 June 1999, will consider important institutional issues with respect to the execution of this programme of work and therefore decides to reconsider the programme at its fifth meeting, if necessary;
5. Invites the Executive Secretary to further develop a uniform methodology for the use of rosters of experts, and agrees to consider proposals in this regard at its fifth meeting;
6. Acknowledges with appreciation the case-studies submitted in response to previous decisions of the Conference of the Parties, and considers that most of these case-studies contain important information for many aspects of the work of the bodies of the Convention;
7. Invites the Executive Secretary to develop a common framework for case-studies, taking into account the information contained in the national reports submitted by Parties pursuant to Article 26 of the Convention on Biological Diversity;
8. Recommends to the Conference of the Parties that the Executive Secretary make available all case-studies, through, inter alia, the clearing-house mechanism, so that the Convention bodies can draw upon the information contained therein as appropriate;
9. Recommends to the Conference of the Parties to request the respective mechanisms under the Convention that are dealing with access to genetic resources and benefit-sharing, as well as Article 8(j) to advise the Conference of the Parties on what scientific, technical and technological aspects are important for the Subsidiary Body on Scientific, Technical and Technological Advice to deal with;
10. Recognizes the need to better consider micro-organisms and genetic diversity in the different elements of longer-term programme of work of the Subsidiary Body on Scientific, Technical and Technological Advice;
11. Recognizes the need to enhance inter-sessional and collaborative initiatives to allow the Subsidiary Body on Scientific, Technical and Technological Advice to better implement the programme of work proposed in the annex to the present recommendation;
12. Recognizes the need to start considering the development of assessments of the status and trends of biological diversity, as called for in Article 25, paragraph 2 (a), of the Convention on Biological Diversity.

/...

AnnexPROGRAMME AREAS TO BE CONSIDERED BY THE SUBSIDIARY BODY ON SCIENTIFIC,  
TECHNICAL AND TECHNOLOGICAL ADVICE FROM THE FOURTH TO THE SEVENTH  
MEETINGS OF THE CONFERENCE OF THE PARTIES (1998-2004)

SBSTTA MEETING	THEMATIC AREA*	MAIN CROSS-CUTTING ISSUES	OTHER ISSUES
<b>Fourth</b> <u>June 1999</u>	<b>[Main]</b> Biological diversity of dryland, Mediterranean, arid, semi-arid, grassland and savannah ecosystems	Sustainable use, including tourism  Alien species  <u>Emerging issue:</u> consequences of new technology for the control of plant gene expression	Cooperation  Global Taxonomy Initiative  Biodiversity impact assessment
<b>Fifth</b> <u>Jan. 2000</u>	<b>[Main]</b> Programme of work for dryland, Mediterranean, arid, semi-arid, grassland and savannah ecosystems  Assessment of activities and priorities for programme of work on agricultural biological diversity	Sustainable use of biological diversity: sectoral activities for adoption of biodiversity-friendly practices and technologies  Development of indicators of biological diversity	Cooperation  Ecosystem approach: further elaboration  Ad hoc technical expert groups: terms of reference  Guidelines for the second National Reports (including indicators and incentive measures)  Analysis of coral bleaching

---

\* Including ongoing activities on existing work programmes.

SBSTTA MEETING	THEMATIC AREA*	MAIN CROSS-CUTTING ISSUES	OTHER ISSUES
<p><b>Fifth</b> Jan. 2000 (contd)</p>			<p>Review of phase I of the clearing-house mechanism and advice</p> <p>Alien species: guiding principles for the prevention, introduction and mitigation of impacts</p> <p>Progress report on the programme of work on forest biological diversity</p> <p>Review of the Global Taxonomy Initiative</p>
<b>Fifth meeting of the Conference of the Parties (May 2000)</b>			
<p><b>Sixth</b> (late 2000 or early 2001)</p>	<p><b>[Main]</b> Biological diversity of forest ecosystems</p>	<p>Report on the integration of the issue of alien species in thematic work programmes</p>	<p>Cooperation</p> <p>Guidelines for the incorporation of biological-diversity-related issues in impact assessments</p> <p>Ecosystem approach and forest biological diversity</p>
<p><b>Seventh</b> (2001)</p>	<p><b>[Main]</b> Biological diversity of forest ecosystems</p>	<p>Guidelines to minimize or mitigate negative impacts of invasive species</p> <p>Programme of work on forest biological diversity, including traditional forest-related knowledge and benefit-sharing</p>	<p>Identification and monitoring, including indicators</p> <p>Linkages between <u>in situ</u> and <u>ex situ</u> conservation</p>

SBSTTA MEETING	THEMATIC AREA*	MAIN CROSS-CUTTING ISSUES	OTHER ISSUES
<b>Sixth meeting of the Conference of the Parties (May 2002)</b>			
<b>Eighth (2002)</b>	<b>[Main]</b> Biological diversity of mountain ecosystems  Review of workplan on inland water biological diversity	Protected areas  Transfer of technology and technology cooperation	Cooperation  Sustainable use and role of the private sector and incentive measures, with a focus on thematic areas considered in the session  <u>In situ</u> conservation: best practices and technologies, including linkages with <u>ex situ</u> conservation
<b>Ninth (early 2003)</b>	<b>[Main]</b> Programme of work on mountain ecosystems  Review of workplan on inland water biological diversity	Guidelines for technology transfer and cooperation  Public education and awareness	Cooperation  Ecosystem approach for mountain areas and inland water ecosystems  Identification and monitoring
<b>Seventh meeting of the Conference of the Parties (May 2004)</b>			

IV/2. Further advancement of a Global Taxonomy InitiativeThe Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling decision III/10 of the Conference of the Parties, supporting a Global Taxonomy Initiative to overcome the taxonomic impediment which had been highlighted in recommendation II/2 of the Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling also decision IV/1 D, in which the Conference of the Parties further reiterated its endorsement of a Global Taxonomy Initiative and provided suggestions for action contained in an annex to that decision,

Recalling also paragraph 2 of decision IV/13 of the Conference of the Parties, which provides advice to the Global Environment Facility regarding the provision of financial resources in support of that decision,

/...

Noting that, in paragraph 3 of decision IV/1 D, the Conference of the Parties requested the Subsidiary Body on Scientific, Technical and Technological Advice to examine the suggestions for action to develop and implement a Global Taxonomy Initiative contained in the annex to decision IV/1 D, and provide advice to the Conference of the Parties on the further advancement of a Global Taxonomy Initiative,

Having examined the note by the Executive Secretary (UNEP/CBD/SBSTTA/4/6) and related documents submitted by DIVERSITAS (UNEP/CBD/SBSTTA/4/Inf.1; UNEP/CBD/SBSTTA/4/Inf.6 and UNEP/CBD/SBSTTA/4/Inf.7),

Recognizing the need for a cohesive global strategy for capacity-building in taxonomy, which requires action at national, subregional, regional and global levels,

Noting the invitation extended by the Conference of the Parties to the United Nations Environment Programme to assist in the global implementation of a Global Taxonomy Initiative, on the basis of the offer made by the Executive Director of the United Nations Environment Programme in his address to the Conference of the Parties at its fourth meeting, as reflected in paragraph 5 of decision IV/1 D,

Noting also the decision of the Organisation for Economic Cooperation and Development to support the establishment of a Global Biodiversity Information Facility which, in close collaboration with the clearing-house mechanism of the Convention and other biological-diversity information networks, will facilitate the sharing of information on biological diversity,

1. Recognizes that development and implementation of a Global Taxonomy Initiative will occur through activities which amplify and operationalize the suggestions for action contained in the annex to decision IV/1 D at the national, subregional, regional and global levels;

2. Recommends to the Conference of the Parties:

(a) That the Executive Secretary develop further a Global Taxonomy Initiative in collaboration with relevant organizations, institutions, the United Nations Environment Programme and other relevant United Nations agencies, using the clearing-house mechanism of the Convention to facilitate exchange and dissemination of information;

(b) That the Executive Secretary undertake the preliminary activities required to build the most effective and flexible framework for implementing a Global Taxonomy Initiative, including the convening of regional meetings of experts to identify priorities, opportunities and constraints, building on the experiences of existing relevant initiatives. Initial priorities should include: capacity-building (in particular training), the development of taxonomy-related products, and dissemination of and access to taxonomy information and collections;



(c) That funding institutions, including the Global Environment Facility, recognize the cross-cutting nature of taxonomy which underpins the ecosystem approach and the thematic approach taken by the Convention, and facilitate partnerships between developing and developed countries;

3. Requests the Executive Secretary to identify options for a coordination structure for a Global Taxonomy Initiative and options for global, regional, subregional and national baseline initiatives in support of the implementation of the established programmes of work of the Convention on Biological Diversity, and to report thereon to the Subsidiary Body on Scientific, Technical and Technological Advice at its fifth meeting;

4. Undertakes to integrate the development and implementation of a Global Taxonomy Initiative in the ongoing thematic and cross-cutting work programmes of the Subsidiary Body on Scientific, Technical and Technological Advice and to advise periodically the Conference of the Parties on further measures required to advance capacity-building for taxonomy.

IV/3. Assessment of the status and trends and options for conservation and sustainable use of terrestrial biological diversity: dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems

The Subsidiary Body on Scientific, Technical and Technological Advice,

Noting that, at its fourth meeting, the Conference of the Parties adopted decision IV/16, which in annex II on its programme of work, considers "dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems" as matters requiring in-depth consideration at its fifth meeting,

Welcoming the note by the Executive Secretary (UNEP/CBD/SBSTTA/4/7) and recognizing that it constitutes a useful basis for developing further work on dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems,

Recalling the importance of enhancing synergies between the Convention on Biological Diversity and other relevant global conventions and international organizations and processes related to biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems,

Recalling the rich biological diversity and high level of endemism and the intrinsic value of the biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems, their hosting of numerous endangered species, as well as the important role they play as centres of diversity for many genetic resources,

Recalling that the biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems provides the livelihood for many indigenous people and local communities, particularly in developing countries, and the great importance of these ecosystems for agriculture,

Recalling that the knowledge and practices of indigenous and local communities could play an important role in the conservation and sustainable management of the biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems,

/...

Recognizing that several aspects of these ecosystems are covered neither by the current thematic work programmes of the Convention on Biological Diversity nor by other conventions or processes,

1. Recommends that the Conference of the Parties:

(a) Consider adopting a programme of work on biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems; and

(b) Consider providing guidance to the financial mechanism regarding the financing of such a programme of work;

2. Requests, therefore, the Executive Secretary:

(a) To prepare a draft programme of work on biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems, in consultation with the Secretariat of the Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa, bearing in mind the need to avoid duplication of work with other global conventions or processes, and to present it to the Subsidiary Body on Scientific, Technical and Technological Advice at its fifth meeting. This draft programme, to be based on the ecosystem approach, should take due account of the three objectives of the Convention, and be demand-driven and flexible. It should identify synergies, gaps and overlaps within the current programmes of the Convention, in particular on agriculture, forest and inland water biological diversity and should integrate consideration of such issues as:

- (i) Fires, land-use management such as grazing and inappropriate land conversion, soil degradation, desertification, impact of agriculture, invasive species, water management, inclusive of all activities that have an impact on the ecosystems;
- (ii) In situ conservation (including protected areas and threatened species), ex situ conservation, as well as restoration or rehabilitation of ecosystems;
- (iii) Socio-economic and cultural aspects, including the needs of indigenous people and local communities, and incentives and economic valuation;
- (iv) Knowledge, innovations and practices of indigenous and local communities, in accordance with Article 8(j) and other related provisions of the Convention on Biological Diversity;
- (v) Capacity-building, particularly in developing countries, including for inventories, evaluations and monitoring;
- (vi) Identification of the most threatened components of these ecosystems (including species);

/...

- (vii) Sustainable use of the components of these ecosystems, including wildlife utilization, bioprospecting, benefit-sharing and sustainable tourism;
- (viii) Taxonomic requirements;
- (ix) Education, training and public awareness; and
- (x) Exchange of relevant information;

(b) To prepare a reporting framework for this work programme;

(c) To propose to the Subsidiary Body at its fifth meeting a shorter compound name for the title of this work programme that will cover all the types of ecosystems as referred to in annex II of decision IV/16 of the Conference of the Parties;

(d) To invite other relevant conventions, organizations and international programmes to support the elaboration of the programme of work on the biological diversity of dryland, Mediterranean, arid, semi-arid, grassland, and savannah ecosystems.

IV/4. Development of guiding principles for the prevention of impacts of alien species and identifying priority areas of work on isolated ecosystems and giving recommendations for further development of the Global Invasive Species Programme

The Subsidiary Body on Scientific, Technical and Technological Advice,

Noting the great importance of the effects of certain alien species on the conservation and sustainable use of biological diversity, as well as the relevance of this issue to most of the themes and other cross-cutting issues under the Convention,

Noting that the terminology surrounding the issue of impacts arising from alien species is interpreted differently by different Parties, and that additional terminology problems arise in the translation,

Noting the desirability of a three-tier hierarchical approach to the prevention, eradication and control of alien species or their impacts,

Noting the importance of continuing its work on the development of draft guiding principles for the prevention, introduction and mitigation of impacts of alien species, with the assistance of the Secretariat,

Recalling decision IV/1 C, adopted by the Conference of the Parties at its fourth meeting, in which the Conference requested the Subsidiary Body on Scientific, Technical and Technological Advice to identify the priority work pertinent to the issue of alien species in geographically and evolutionarily isolated ecosystems,

1. Requests the Executive Secretary to develop, in cooperation with the Global Invasive Species Programme, principles for the prevention, introduction and mitigation of impacts of alien species, taking into account the proposed principles presented for debate at the fourth meeting of the Subsidiary Body (UNEP/CBD/SBSTTA/4/Inf.8) and the IUCN draft Guidelines on the Prevention of Biological Diversity Loss Due to Biological Invasions, for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice at its fifth meeting;

2. Requests the Executive Secretary to develop an outline for case studies on alien species that is designed to ensure a consistent format for the case studies. In doing this work, the Executive Secretary should consider the proposals from two Parties, as set out in annexes I and II to the present recommendation;

3. Requests the Executive Secretary to invite Parties, other Governments and relevant bodies to urgently submit available case-studies on alien species to the Executive Secretary, to contribute to the Secretariat's work of preparing advice for the fifth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice;

4. Recommends that the Conference of the Parties:

(a) Request the Executive Secretary to develop an inventory of initiatives and a roster of experts, and use the clearing-house mechanism to make this information available to Parties, other Governments and the international community at large;

(b) Request the Executive Secretary to formally liaise with the Global Invasive Species Programme and other relevant organizations through the establishment of memoranda of cooperation, containing, as an annex, a detailed plan for joint actions;

(c) Request the Executive Secretary to further integrate the issue of alien species in the implementation of the thematic work programmes and to report thereon to the Conference of the Parties at its sixth meeting;

(d) Invite the Global Invasive Species Programme to undertake a comprehensive review on the efficiency and efficacy of existing measures for prevention, early detection, eradication and control of alien species and their impacts, giving priority to measures pertinent to the issue of alien species in geographically and evolutionarily isolated ecosystems and to report thereon to the Subsidiary Body on Scientific, Technical and Technological Advice at its sixth meeting;

(e) Request the Global Invasive Species Programme, in developing a global strategy to deal with alien species, to ensure consistency with the provisions on alien species in Article 8(h) of the Convention and relevant provisions within other articles, including Article 14, taking into full account considerations on alien species within relevant decisions of the Conference of the Parties on, for example, the conservation and sustainable use of inland water, marine and coastal, and forest biological diversity;

/...

(f) Invite the Global Invasive Species Programme, the Food and Agriculture Organization of the United Nations, the International Maritime Organization, the World Health Organization and other relevant organizations to assist the Parties to the Convention in:

- (i) Developing a standardized terminology on alien species;
- (ii) Developing criteria for assessing risks from introductions;
- (iii) Assessing the positive and negative socio-economic implications of alien species for sectoral human activities (e.g. agriculture, fisheries, forestry, tourism, horticulture, aquaculture, etc.) and the role of these and other sectors, with respect to the introduction of alien species, and also the implications for indigenous people and traditional communities;
- (iv) Furthering research on the impact of alien species on biological diversity;
- (v) Developing means to enhance the capacity of ecosystems to resist or recover from alien-species invasions;
- (vi) Developing a system for reporting new invasions of alien species and the spread of alien species into new areas;
- (vii) Assessing priority for taxonomic work;

and to inform the Subsidiary Body on Scientific, Technical and Technological Advice at its sixth meeting on progress made;

(g) Invite the Global Invasive Species Programme, inter alia, to make all relevant information which it holds or acquires, including databases of alien species invasions, available through the clearing-house mechanism;

(h) Encourage Parties to develop effective education, training and public awareness measures, as well as to involve further the public, with a view to informing it about the different aspects of the issue, including the risks posed by certain alien species;

(i) Strongly encourage Parties to develop mechanisms for transboundary cooperation, regional and multilateral cooperation in order to deal with the issue, including the exchange of best practices;

(j) Urge Parties, other Governments and relevant bodies, and the Secretariat, in their work on alien species, to give priority to the implementation of the strategy of the Global Invasive Species Programme in relation to geographically and evolutionarily isolated ecosystems and to use the precautionary and ecosystem approaches as guiding framework principles.

Annex I

## OUTLINE FOR CASE-STUDIES ON ALIEN SPECIES

To the extent possible, case-studies should be short, succinct summaries of experiences on alien species at the country and the regional levels. A case-study should focus on the prevention of the introduction, control or eradication of alien species that threaten ecosystems, habitats or species. If possible, case-studies should be provided in hard copy and an electronic version (by floppy disk or via electronic mail). Case-studies should follow, to the extent possible, the proposed structure outlined below.

## 1. Overview

- Study area
- Stakeholders involved
- Time-frame addressed
- Groups of organisms studied (e.g. plants, insects)
- Relationships with relevant articles of the Convention, decisions of the Conference of the Parties and/or the recommendations of the Subsidiary Body on Scientific, Technical and Technological Advice

## 2. Description of the problem

- Ecological context (status of the affected ecosystem, species diversity and genetic diversity)
- Monitoring and assessment activities conducted and methods applied
- History, origin and pathway of introductions
- Description and assessment of the impact on conservation and sustainable use of biological diversity, covering both economic and ecological aspects
- Uncertainties due to missing taxonomic knowledge

## 3. Current measures to address the problem

- Prevention measures
- Control and containment measures
- Eradication measures
- Legal provisions and implementation of measures, including assessment of effectiveness

## 4. Conclusion

- Further measures needed, including transboundary, regional and multilateral cooperation
- Replicability for other regions, ecosystems or groups of organisms
- Information compilation and dissemination needed

/...

Annex II

## OUTLINE FOR CASE-STUDIES ON ALIEN SPECIES

To the extent possible, case-studies should be short, succinct summaries of experiences on alien species at the country and the regional levels. A case-study should focus on the prevention of the introduction, control or eradication of alien species that threaten ecosystems, habitats or species. If possible, case-studies should be provided in hard copy and an electronic version (by floppy disk or via electronic mail). Case-studies should follow, to the extent possible, the proposed structure outlined below.

Case-studies should include the following sections. A summary of the information may be provided under each heading, and a more detailed paper may be attached. If the information is not available, this should be indicated in the appropriate section.

1. Location of the case-study.
2. Identification of alien species (the scientific name of species should be indicated if possible).
3. Biology of the alien species.
4. Vector of invasion (e.g. deliberate importation, contamination of imported goods, ballast water, hull fouling, spread from adjacent area. It should be noted, if there is a difference between the initial entry into the country and later spread.) It should be specified (if known) whether entry was deliberate and legal, deliberate and illegal, accidental, or natural.
5. How and when the alien species was first detected.
6. Ecosystem invaded or threatened (specify in general terms, e.g. tropical rain forest, temperate estuary, and also give detailed description if relevant).
7. Potential or actual impacts, including on biological diversity and on stakeholder interests in that biological diversity.
8. What time period between initial entry of the alien species and the development of impacts.
9. Options considered for response to the threat or impacts, and reasons for selecting the actions taken.
10. Institutions responsible for decisions and actions.
11. Details of decision-making process, including stakeholders affected, consultation processes used, etc.

/...

12. Actions and related measures taken. First, categorize the action as prevention, early detection, eradication, localized eradication or control, or restoration of habitats or natural communities affected by alien species. Then provide details of the particular actions or measures, including the detailed methods used. Include any research, monitoring, public education and regulatory measures. Specify the time involved, including dates.
13. Costs of action and benefits achieved. Specify whether the action was fully successful, partially successful or unsuccessful. In specifying costs, include any adverse effects of the actions taken on the conservation and sustainable use of biodiversity.
14. Any lessons learned from the operation.

IV/5. Consequences of the use of the new technology for the control of plant gene expression for the conservation and sustainable use of biological diversity

The Subsidiary Body on Scientific, Technical and Technological Advice,

Noting that, based on expert opinion, products incorporating either variety-specific genetic use restriction technologies (V-GURTs) or trait-specific genetic use restriction technologies (T-GURTs), as defined in the annex to the note by the Executive Secretary on the consequences of the use of the new technology for the control of plant gene expression for the conservation and sustainable use of biological diversity (UNEP/CBD/SBSTTA/4/9/Rev.1), are not likely to be commercialized in the near future and that at this time no example of this technology has been released in either research or investigative field trials, resulting in a lack of information,

Noting that many countries already have policy or regulatory frameworks in place, or under development, to address the use of new technologies, but that many countries do not,

Acknowledging that this situation makes necessary adequate and thorough research and studies to assess, inter alia, on a case-by-case basis, the potential implications of genetic use restriction technologies and to put in place the required procedures to anticipate and prevent or mitigate any potential negative impacts,

Recognizing that genetic use restriction technologies are a form of new technologies that will be developed and it is necessary to reflect seriously on the policies associated with their emergence and to place more weight on the environmental and global implications of the development of technologies so that those technologies meet the needs of growing rural and urban populations, while satisfying long-term sustainability needs and social and ethical requirements,

/...



Noting the need for holistic approaches that revalidate ecological principles and practices of agricultural production, reduced chemical dependence and maintained biological diversity,

Recognizing that organisms engineered by variety-specific and trait-specific genetic use restriction technologies are living modified organisms and that these two applications could have significantly different impacts on the conservation and sustainable use of biological diversity,

Recognizing that any Party or Government may, subject to any applicable national laws, choose, having regard to Article 22 of the Convention, to take legislative, administrative or policy measures as appropriate, to establish a moratorium in its country on field-testing and the commercial use of genetic use restriction technologies,

Stressing that all work in this area should be conducted in accordance with the precautionary approach, as formulated in the ninth preambular paragraph of the Convention on Biological Diversity,

Recommends that the Conference of the Parties:

At the international level

(a) Continue the work in this area under the umbrella of, and integrated into, the programme of work on agricultural biological diversity;

(b) Desiring to make the most efficient use of resources by avoiding duplication of effort and being cognizant of the work being undertaken and the expertise available in different forums, in particular, the Food and Agriculture Organization of the United Nations and its Commission on Genetic Resources for Food and Agriculture, invite the Food and Agriculture Organization of the United Nations, in close collaboration with the United Nations Educational, Scientific and Cultural Organization, the United Nations Environment Programme and other member organizations of the Ecosystem Conservation Group (ECG), and other competent organizations and research bodies, to further study the potential implications of such technologies on the conservation and sustainable use of agricultural biological diversity and the range of agricultural production systems in different countries, and identify relevant policy questions and socio-economic issues that may need to be addressed;

(c) Invite the Food and Agriculture Organization of the United Nations and its Commission on Genetic Resources for Food and Agriculture and other competent organizations to inform the Conference of the Parties at its sixth meeting of its initiatives in this area;

(d) Recognizing the need to better understand the intellectual-property-rights implications of genetic use restriction technologies, invite relevant organizations to study the impact of technologies on the protection of intellectual property in the agriculture sector, and its appropriateness for the agricultural sector, and to make assessments of the technologies concerned available through the clearing-house mechanism;

(e) Recommend that, in the current absence of reliable data on genetic use restriction technologies without which there is an inadequate basis on which to assess their potential risks, and in accordance with the precautionary approach, products incorporating such technologies should not be approved by Parties for field testing until appropriate scientific data can justify such testing, and for commercial use until appropriate, authorized and strictly controlled scientific assessments with regard to, inter alia, their ecological and socio-economic impacts and any adverse effects for biological diversity, food security and human health have been carried out in a transparent manner and the conditions for their safe and beneficial use validated. In order to enhance the capacity of all countries to address these issues, Parties should widely disseminate information on scientific assessments, including through the clearing-house mechanism, and share their expertise in this regard.

At the national level

(f) Encourage Parties and Governments to consider how to address generic concerns regarding such technologies as genetic use restriction technologies under international and national approaches to the safe and sustainable use of germplasm;

(g) Reaffirming the need of Parties and Governments for additional information, and recalling Article 8(g) of the Convention on Biological Diversity, which calls on Parties and Governments to establish or maintain procedures for regulating, managing or controlling risks associated with the use and release of living modified organisms resulting from biotechnology, invite Parties to carry out and disseminate the results through the clearing-house mechanism and submit scientific assessments on, inter alia, ecological, social and economic effects of genetic use restriction technologies taking into account such information, as available, as:

- (i) The molecular biology information available;
- (ii) The genetic constructs and inducers used;
- (iii) Effects at the molecular level, such as site-specific effects, gene-silencing, epigenesis and recombination;
- (iv) Potential positive applications of the variety-specific genetic use restriction technologies on limiting gene flow, and possible negative impacts of genetic use restriction technologies on small populations of threatened wild relatives;

and to make these assessments available through, inter alia, the clearing-house mechanism;

(h) Further encourage Parties and Governments to identify ways and means to address the potential impacts of genetic use restriction technologies on the in situ and ex situ conservation and sustainable use, including food security, of agricultural biological diversity;

(j) Urge Parties and Governments to assess whether there is a need to develop, and how to ensure the application of, effective regulations at national level which take into account, inter alia, the specific nature of variety-specific and trait-specific genetic use restriction technologies, in order to ensure the safety of human health, the environment, food security and the conservation and sustainable use of biological diversity and to make this information available through, inter alia, the clearing-house mechanism;

#### Secretariat

(k) Request the Executive Secretary to prepare a report, to be considered by the Subsidiary Body on Scientific, Technical and Technological Advice at a future meeting prior to the sixth meeting of the Conference of the Parties, on the status of development of genetic use restriction technologies and of relevant initiatives at international, regional and national levels on the basis of information provided by organizations, Parties and Governments;

(l) Recognizing the importance of indigenous and local communities in the conservation and sustainable use of plant genetic resources according to Article 8(j) of the Convention, and taking into account the revision of the International Undertaking on Plant Genetic Resources for Food and Agriculture, request the Executive Secretary to discuss with those organizations with relevant expertise and representatives of indigenous and local communities on the potential impacts of the application of genetic use restriction technologies on those communities and on Farmers' Rights in keeping with the revision of the aforementioned International Undertaking to keep, use, exchange and sell seed or propagating material and to prepare a report to be considered by the Conference of the Parties.

#### IV/6. Incorporation of biological diversity considerations into environmental impact assessment

##### The Subsidiary Body on Scientific, Technical and Technological Advice,

Noting that 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 complete environmental impact assessments in many countries,

Affirming the importance of considering indirect, cumulative and transboundary impacts on biological diversity and the quality of life for human beings, developing alternatives and mitigation measures,

Stressing the importance of considering the execution of strategic impact assessment and environmental impact assessment for policies, plans, programmes and projects that might have direct, indirect or cumulative significant adverse effects on biological diversity,

Stressing also the urgent need for capacity-building, including the development of local expertise in assessment methodologies, techniques and procedures, to permit, at the very least, the identification of impacts of major importance on biological diversity,

/...

Aware that the implementation of sectoral legislation may have an impact on biological diversity,

Recommends that the Conference of the Parties:

- (a) Invite Parties, Governments and other relevant organizations:
- (i) To implement Article 14 of the Convention on Biological Diversity in connection with other components of the Convention and to integrate environmental impact assessment into the work programme on thematic areas, such as inland waters, marine and coastal, forest, agricultural biological diversity, dryland ecosystems, and on alien species and tourism;
  - (ii) To address loss of biological diversity, and the interrelated socio-economic, cultural and human health aspects relevant to biological diversity in carrying out environmental impact assessments;
  - (iii) To consider biological diversity concerns in the development of new legislative and regulatory frameworks from the early stages of the drafting process;
  - (iv) To ensure the involvement of interested and affected stakeholders in a participatory approach to all stages of the assessment process, including governmental bodies, the private sector, research and scientific institutions, indigenous and local communities and non-governmental organizations, including by the use of appropriate mechanisms, such as the setting up of committees, at the appropriate level, to this end;
  - (v) To organize experts meetings, workshops, seminars, as well as training, educational and public-awareness programmes and exchange programmes, in order to promote the development of local expertise in methodologies, techniques and procedures;
- (b) Encourage Parties, Governments and relevant organizations to use strategic environmental assessment in order to assess impacts not only of individual projects, but also of the cumulative and global effects, incorporating biological diversity considerations at the decision-making/environmental planning level, to include the development of alternatives, mitigation measures and consideration of the elaboration of compensation measures in environmental impact assessment;
- (c) Request Parties to include in their national reports practices, systems, mechanisms and experiences on the subject;
- (d) Request the Subsidiary Body on Scientific, Technical and Technological Advice to further develop guidelines on the incorporation of biodiversity-related issues into legislation and/or processes on environmental impact assessment, in collaboration with the scientific community, the private sector, indigenous and local communities, non-governmental organizations and relevant organizations at the international, regional, subregional and national level, such as the Scientific and

/...

Technical Review Panel of the Convention on Wetlands, the scientific body of the Convention on Migratory Species, DIVERSITAS, IUCN and the International Association for Impact Assessment, the United Nations Environment Programme and the Parties, and further elaborate the application of the precautionary approach and the ecosystem approach, with a view to completion by the sixth meeting of the Conference of the Parties;

(e) Request the Executive Secretary also to make accessible and increase the call for case-studies, including negative impacts and, in particular, impact assessments taking the ecosystem approach into account, to compile and evaluate existing guidelines, procedures and provisions for environmental impact assessment, and make this information available, together with information on existing guidelines on incorporating biological diversity considerations into environmental impact assessment through, inter alia, the clearing-house mechanism in order to facilitate sharing of information and exchange of experiences at regional, national and local level.

IV/7. Development of approaches and practices for the sustainable use of biological resources, including tourism

The Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling decisions IV/15 and IV/16 adopted by the Conference of the Parties to the Convention on Biological Diversity at its fourth meeting,

Welcoming the outcome of the seventh session of the Commission on Sustainable Development on tourism and sustainable development,

Recalling also that the General Assembly, in its resolution 53/200 of 15 December 1998, proclaimed the year 2002 as the International Year of Ecotourism and its resolution 53/24 of 10 November 1998 proclaimed 2002 also as the International Year of Mountains,

Considering the importance of tourism, as one example of sustainable use of the components of biological diversity and that the consideration of sustainable use of biological diversity will take place at the fifth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice,

Understanding that linkages between tourism and sustainable use of biological diversity will be examined by the Executive Secretary in order to elucidate any principles, approaches or methodologies that may apply to a wider consideration of sustainable use, in the fifth meeting of SBSTTA and that in further preparing for this meeting contact will be initiated with other groups involved in sustainable use, such as the Sustainable Use Initiative,

Recommends that the Conference of the Parties:

(a) Adopt the assessment of the interlinkages between biological diversity and tourism, as contained in the annex to the present recommendation, which includes:

/...

- (i) The role of tourism in the sustainable use of biological resources, including the economic importance of tourism in the interrelationship between tourism and the environment and potential benefits for the conservation and sustainable use of biological diversity;
  - (ii) The potential impacts on biological diversity of tourism, including economic, social and environmental impacts;
- (b) Accept the invitation to participate in the international work programme on sustainable tourism development under the CSD process with regard to biological diversity, in particular, with a view to contributing to international guidelines for activities related to sustainable tourism development in vulnerable terrestrial, marine and coastal ecosystems and habitats of major importance for biological diversity and protected areas, including fragile mountain ecosystems;
- (c) Decide to transmit the assessment of the interlinkages between tourism and biological diversity to the Commission on Sustainable Development, with the recommendation to the Commission on Sustainable Development to incorporate the assessment in the international work programme on sustainable tourism development;
- (d) Recommend to Parties, Governments, the tourism industry and relevant international organizations to consider this assessment as a basis for their policies, programmes and activities in the field of sustainable tourism and encourages them to pay particular attention to:
- (i) The unique role of ecotourism - i.e. tourism that relies on the existence and maintenance of biological diversity and habitats - and to develop clear strategies to develop sustainable ecotourism sectors which provides viable income-generating opportunities for indigenous and local communities;
  - (ii) The need to develop, with all the potential stakeholders, strategies and planning, based on an ecosystem approach and aiming at the correct balance between economic, social and environmental concerns, maximizing opportunities for the conservation and sustainable use of biological diversity and the equitable sharing of benefits, recognition of traditional knowledge, and minimizing risks to biological diversity;
  - (iii) The need for long-term monitoring and assessment, including the development and use of indicators to measure impacts of tourism on biological diversity and consequently to improve strategies and plans for tourism activities;
  - (iv) Bringing to the local economies tangible benefits, such as job creation and sharing of benefits arising from the sustainable use of biological diversity for tourism purposes. In this regard, small and medium-sized enterprises can play a major role;

- (v) The need to develop sustainable tourism which is essential for the conservation and management of biological diversity and to meet the expectations of all stakeholders, while encouraging responsible behaviour on the part of tourists, of people working in tourism enterprises and of the local population;
  - (vi) Awareness-raising, information-sharing, education and training of tourism operators and sensitization of tourists on biological diversity issues, which enhance the goal of the respect and the conservation of biological diversity and its sustainable use;
  - (vii) The fact that in order to ensure the sustainable use of biological diversity through tourism, there is a need to implement a flexible mix of instruments, such as integrated planning, multi-stakeholder dialogue processes, zoning in land-use planning, environmental impact assessment, including strategic environmental impact assessment, standards, industry performance-recognition programmes, ecolabelling, codes of good practices, environmental management and audit systems, economic instruments, indicators and limits for the carrying capacity of the natural areas;
  - (viii) The importance of the involvement and the need for participation of indigenous and local communities and their interface with other sectors in the development and management of tourism, as well as their monitoring and assessment, including of cultural and spiritual impacts; and
  - (ix) The importance of the understanding of the values and knowledge of use of the biological diversity by the indigenous and local communities and their opportunities for sustainable tourism and the promotion of local tourism;
- (e) Endorse the work of the Subsidiary Body on Scientific, Technical and Technological Advice on tourism as an example of sustainable use of biological diversity by exchanging experiences, knowledge and best practices through the clearing-house mechanism and encourage Parties, Governments and relevant organizations to continue to submit to the Executive Secretary case-studies in this regard;
- (f) In order to contribute further to the international work programme on sustainable tourism development under the Commission on Sustainable Development process with regard to biological diversity, in particular, to the review of its implementation, which will be carried out in 2002, request the Subsidiary Body on Scientific, Technical and Technological Advice, through the Executive Secretary, to transmit its findings to the Commission on Sustainable Development at its tenth session;
- (g) Encourage Parties, Governments, the tourism industry and relevant organizations to undertake activities that would be supportive of the preparations for both the International Year of Ecotourism and the International Year of Mountains, as well as activities of the International Coral Reef Initiative.

Annex

## ASSESSMENT OF THE INTERLINKAGES BETWEEN TOURISM AND BIOLOGICAL DIVERSITY

## I. THE ROLE OF TOURISM IN THE SUSTAINABLE USE OF BIOLOGICAL RESOURCES

1. The sustainable use of the components of biological diversity is one of the three objectives of the Convention on Biological Diversity. For the purposes of the Convention, "sustainable use" means "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations" (Article 2). This definition of sustainable use is consistent with the concept of sustainable development as elaborated in the Rio Declaration on Environment and Development and Agenda 21, whereby "sustainable development" meets the needs and aspirations of the current generations without compromising the ability to meet those of future generations. Sustainable development cannot be achieved without the sustainable use of the world's biological resources. The concept of sustainable use is grounded in Article 10 of the Convention on Biological Diversity, on sustainable use of components of biological diversity, and in Article 6, on general measures for conservation and sustainable use of biological diversity.

2. Sustainable tourism is developed and managed in a manner that is consistent with Agenda 21 and the ongoing work on this matter as promoted by the Commission on Sustainable Development. As such, sustainable tourism includes such aspects as sustainable use of resources, including biological resources, and minimizes environmental, ecological, cultural and social impacts, and maximizes benefits. For sustainable patterns of consumption and production in the tourism sector, it is essential to strengthen national policy development and enhance capacity in the areas of physical planning, impact assessment, and the use of economic and regulatory instruments, as well as in the areas of information, education and marketing. Particular attention should be paid to the degradation of biological diversity and fragile ecosystems, such as coral reefs, mountains, coastal areas and wetlands. Ecotourism is a new, growing sector of tourism, which relies on the existence and maintenance of biological diversity and habitats. While it may require less infrastructure construction and facility-building than conventional tourism, proper planning and management are important to the sustainable development of ecotourism and to prevent threats to biological diversity on which it is intrinsically dependent.

A. Economic importance of tourism

3. Tourism is one of the world's fastest growing industries and the major source of foreign exchange earnings for many developing countries. The receipts from international tourism grew at an average annual rate of 9 per cent for the ten-year period from 1988 to 1997, reaching \$443 billion in 1997. Tourist arrivals worldwide increased by 5 per cent per annum on average during the same period. <sup>1/</sup> According to WTO, tourism receipts accounted for a little over 8 per cent of total world exports of goods and

---

<sup>1/</sup> World Tourism Organization, Tourism Highlights 1997.



almost 35 per cent of the total world exports of services in 1997. The breakdown of the travel account balance shows that the industrialized countries as a whole are the net importers of such services, while the developing countries as a whole have been increasing their surplus. The surplus for the latter group of countries widened steadily from \$4.6 billion in 1980 to \$65.9 billion in 1996, offsetting more than two thirds of their current account deficit in 1996. The travel surplus has widened steadily in all developing regions in the past decade. Economies in transition recorded a deficit of \$3.5 billion in 1995, which swung back to a surplus of \$1.5 billion in 1996.

4. From the production point of view, tourism contributes around 1.5 per cent of world gross national product (GNP). 2/ Tourism is also a major source of employment, the hotel accommodation sector alone employing around 11.3 million people worldwide. 3/ Furthermore, tourism based on the natural environment is a vital and growing segment of the tourism industry, accounting for \$260 billion in 1995. 4/ In a number of developing countries, tourism has already overtaken cash-crop agriculture or mineral extraction as their major source of national income. 5/

#### B. Tourism and environment

5. The global social, economic and environmental impacts of tourism are immense and highly complex. Given that a high percentage of tourism involves visits to naturally and culturally distinguished sites, generating large amounts of revenue, there are clearly major opportunities for investing in the maintenance and sustainable use of biological resources. At the same time, efforts must be made to minimize the adverse impacts of the tourism industry on biological diversity.

6. Historical observation indicates that self-regulation of the tourism industry for sustainable use of biological resources has only rarely been successful. This is due to a number of factors. First, as there are many individual operators, local environmental conditions may be viewed as a type of common property resource. It will not be in the interests of any individual operator to invest more than his or her competitors in maintaining the general environmental standards in the resort. Similarly, operators are very likely to "export" their adverse environmental impacts, such as refuse,

---

2/ Report of the Secretary-General on tourism and sustainable development, addendum: Tourism and economic development, Commission on Sustainable Development, seventh session, January 1999 (Advance unedited copy).

3/ Ibid.

4/ Jeffrey McNeely, "Tourism and Biodiversity: a natural partnership", presented at the Symposium on Tourism and Biodiversity, Utrecht, 17 April 1997.

5/ Report of the Secretary-General on tourism and sustainable development, addendum: Tourism and economic development, Commission on Sustainable Development, seventh session, January 1999 (Advance unedited copy).

waste water and sewage, to parts of the surrounding area unlikely to be visited by tourists. This reaches its most extreme form in so-called "enclave" tourism, where tourists may remain for their entire stay in an artificially maintained environment isolated from its surroundings.

7. Second, international tourism operates in an increasingly global market in which investors and tourists have an ever-widening choice of destinations. Indeed the search for new and novel areas and experiences is one of the major engines driving the tourism life-cycle. Moreover, much of the tourism industry is controlled by financial interests located away from tourist destinations. When environmental conditions begin to deteriorate in a given location, operators are likely to shift to alternative locations rather than to invest in improving those conditions.

8. Finally, the international tourism market is fiercely competitive, much of it operating on low profit margins. Operators are therefore often extremely reluctant to absorb any additional costs associated with improving environmental conditions, and instead will often find it economically expedient to shift their area of operation rather than face such costs.

C. Potential benefits of tourism for the conservation of biological diversity and the sustainable use of its components

9. Despite the potential negative impacts, and given the fact that tourism generates a large proportion of income and that a growing percentage of tourism is nature-based, tourism does present a significant potential for realizing benefits in terms of the conservation of biological diversity and the sustainable use of its components. This section addresses the potential benefits of tourism. Among the benefits are direct revenues generated by fees and taxes incurred and voluntary payments for the use of biological resources. These revenues can be used for the maintenance of natural areas and the contribution of tourism to economic development, including linkage effects to other related sectors and job-creation.

10. Revenue creation for the maintenance of natural areas. The most direct means of exploiting tourism for the sustainable use of biological resources is through the harnessing of some proportion of tourism revenues for that end. This may be achieved either through a generalized environmental tax on tourists or particular tourism activities or by charging fees for access to biological resources, the revenue from which can then be used for their maintenance. The latter procedure generally means charging entrance fees to national parks and other protected areas, but also includes fees for activities such as fishing, hunting and diving. Voluntary payment from visitors can also assist in conservation and management of places they visit. It may include donation, membership, sponsorship, merchandise and practical tasks.

11. There are several notable, and evidently expanding, specialist tourism sectors, where participants may be willing to pay such fees. There is growing interest in tourism programmes that involve tourists in biodiversity observation and monitoring to support conservation programmes. The largest single specialist sector at present is probably bird-watching, although it is not clear whether bird-watchers as a group are in fact any more willing to pay than less-specialized tourists. In marine-based wildlife tourism, scuba-

/...

diving represents an important specialist sector. The specialist sector which appears to show the highest willingness to pay is sport hunting, where very large licence fees can be charged under some circumstances. It must also be recognized that these fees and taxes can also be used as measures to regulate the level of access to concerned sites and biological resources. In addition, the prospect of their continued revenue generation provides a direct incentive for the maintenance of the populations or ecosystems. One potential negative aspect of specialist tourism, however, can be the relatively low level of local community involvement since relatively few local people will be involved as specialist guides or park managers.

12. The contribution of tourism to economic development. Whether tourists are paying access fees or not, they have a major economic impact on the areas that they visit. Tourist expenditures, in net terms, generate income to the host communities by, for example:

(a) Funding the development of infrastructure and services. Tourism also stimulates infrastructure investment, such as construction of buildings, roads, railroads, airports, sewage systems, water-treatment facilities and other tourism-related facilities. Existing infrastructure may also be used in a manner which benefits local communities, where the tourist is using the facility in one way, while the community uses it in another. For example, a school may gain revenue from its use as a campground or conference venue. Improved and cheap transport services might also be brought to local communities by increased tourism;

(b) Providing jobs. Tourism generates job opportunities in the sector and offers various related business opportunities derived from tourism. People involved in tourism activities may become more conscious of the value of conserving their natural areas;

(c) Providing funds for development or maintenance of sustainable practices. Increasing revenue flows in a region may also allow development of more sustainable land-use practices, by allowing, for example, farmers to use improved rotations and some level of fertilizer input, rather than relying on slash-and-burn cultivation to restore soil fertility through fallow periods;

(d) Providing alternative and supplementary ways for communities to receive revenue from biological diversity. Tourism can also provide a viable economic alternative to unsustainable production or harvesting practices or other activities deleterious to the environment, particularly in marginal areas, helping to eradicate poverty;

(e) Generating incomes. In some areas, low-input and small-scale agricultural activities that result in both an attractive environment and the maintenance of high levels of biological diversity can also offer an opportunity for tourism. Sale of products (souvenirs, crafts and arts) derived from sustainably harvested natural resources may also provide significant opportunities for income-generation and employment. Tourists who have experienced a country associated with clean and green values may be encouraged to select products from that country.

13. Sustainable tourism can make positive improvements to biological diversity conservation especially when local communities are directly involved with operators. If such local communities receive income directly from a tourist enterprise, they, in turn, increase their evaluation of the resources around them. This is followed by greater protection and conservation of those resources as they are recognized as the source of income.

14. Public education and awareness. Tourism can serve as a major educational opportunity, increasing knowledge of natural ecosystems and local communities amongst a broad range of people, in particular by tour operators and guides with specialized training in biological diversity conservation, indigenous and local communities. Such education may be reciprocal. In some parts of the world, local people have become more aware of the uniqueness of their local biological resources, for example the presence of endemic species, through the advent of tourism. Better-informed tourists are more willing to pay for the access to natural sites. Tourism can also provide incentives to maintain traditional arts and crafts and opportunities to learn about different cultures. Furthermore, tourism may, under some circumstances, encourage the maintenance or revitalization of traditional practices that are favourable to the sustainable use of biological resources and that would otherwise be in danger of being lost.

## II. POTENTIAL IMPACTS ON BIOLOGICAL DIVERSITY OF TOURISM

15. In considering the role of tourism in the sustainable use of biological resources and their diversity, it is important that the potential adverse impacts of tourism are fully considered. These are roughly divided into environmental impacts and socio-economic impacts, the latter generally being those imposed on local and indigenous communities. Although such impacts on biological resources may be less easy to quantify and analyse systematically, they may be at least as important as, if not more important than, environmental impacts in the long term. Section A below addresses the potential adverse impacts on environment, while section B contains the potential socio-economic impacts.

### A. Environmental impacts

16. Use of land and resources. Direct use of natural resources, both renewable and non-renewable, in the provision of tourist facilities is one of the most significant direct impacts of tourism in a given area. Such use may be one-off or may be recurring. The most important are: (i) the use of land for accommodation and other infrastructure provision, including road networks; and (ii) the use of building materials. Strong competition for the use of land between tourism and other sectors results in rising prices, which increase the pressures on, for example, agricultural land. The choice of site is also an important factor. Generally preferred "attractive landscape sites", such as sandy beaches, lakes and riversides, and mountain tops and slopes, are often transitional zones, normally characterized by species-rich ecosystems. As a result of the construction of buildings in these areas,

/...

they are often either destroyed or severely impaired. 6/ Deforestation and intensified or unsustainable use of land also cause erosion and loss of biological diversity. Due to lack of more suitable sites for construction of buildings and other infrastructure, coastal wetlands are often drained and filled. Construction of marinas in certain sites and water-based tourist activities can also impact on ecosystems and even coastal coral reefs. In addition, building materials are often extracted in an unsustainable manner from ecosystems. Excessive use of fine sand of beaches, reef limestone and wood can cause severe erosion. 7/ Furthermore, creation of congenial conditions for tourists may often entail various forms of environmental manipulation that may have consequences for biological resources beyond the limits of acceptable change.

17. Impacts on vegetation. Direct impact on the species composition of vegetation on the ground layer can be caused by trampling and off-road driving. Off-road driving is often carried out in ecosystems perceived as a low value, such as deserts. Deserts are fragile ecosystems which can be seriously damaged by a single passage of a motor vehicle. Plant-picking and uprooting by plant collectors and casual flower-pickers can also lead to loss of individual species. Passage of tourism vehicles, particularly in high volumes along popular routes, and associated vehicle pollution also have adverse effects on vegetation, resulting in a loss of vegetation cover. Furthermore, forest fires may be caused by the careless use of campfires. The choice of sites for construction facilities can also affect vegetation patterns and species diversity. 8/

18. Impacts on wildlife. Wildlife tourism and other types of nature-oriented tourism may have a number of direct impacts on natural resources. The severity of these impacts is variable and has rarely been quantified for any specific cases. Actual or potential impacts include: (i) damage caused by tourism activities and equipment; (ii) increased risk of the spread of pathogens from humans or companion animals to wild species; (iii) increased risk of introduction of alien species; (iv) disturbance of wild species, thereby disrupting normal behaviour and conceivably affecting mortality and reproductive success; (v) alterations in habitats; and (vi) unsustainable consumption of wildlife by tourists.

19. One of the direct effects on wildlife of unregulated tourism may be the depletion of local populations of certain species caused by unregulated hunting, shooting and fishing. Uneducated divers and tour operators can cause extensive damage to coral reefs through trampling and anchoring. Tourists and tourist transportation means can increase the risk of introducing alien species. In addition, the manner and frequency of human presence can cause disturbance to the behaviour of animals, in particular, noise caused by radios, motorboat engines and motor vehicles. Even without much noise, some waterfowl can be agitated by canoes and rowing boats.

---

6/ Biodiversity and Tourism: Conflicts on the world's seacoasts and strategies for their solution, German Federal Agency for Nature and Conservation ed., 1997.

7/ Ibid.

8/ Ibid.

Construction activities related to tourism can cause enormous alteration to wildlife habitats and ecosystems. Furthermore, increased consumption of wildlife by tourists can affect local wildlife populations and local fisheries as well as the amount available for consumption by local people. Souvenir manufacturing using wildlife, in particular such endangered species as corals and turtle shells, can also seriously affect those populations.

20. Impacts on mountain environments. Tourism has for many years been focused on mountain areas, which provide opportunities for hiking, white-water rafting, fly fishing, para-gliding and winter sports, especially skiing and related activities. Pressures from these activities on biological resources and their diversity are enormous and include: erosion and pollution from the construction of hiking trails, bridges in high mountains, camp sites, chalets and hotels. There has been increasing awareness of and publicity on the negative effects of tourism on mountains. The Kathmandu Declaration on Mountain Activities was adopted as long ago as 1982 by the International Union of Alpine Associations, in order to address these pressures on the fragile mountain ecosystems and to call for improved practices. The Convention on the Protection of the Alps, signed in 1991, and its Protocol on Tourism are the first international legal instruments addressing the potential risks associated with mountain tourism. The case-study on the Annapurna Conservation Area project also points out the difficulty in managing increased tourism activities in the fragile mountain ecosystems.

21. Impacts on the marine and coastal environment. Tourism activities may have major impacts on the marine and coastal environment, the resources they host and the diversity of those resources. Most often, those impacts are due to inappropriate planning, irresponsible behaviour by tourists and operators and/or lack of education and awareness of the impacts by, for example, tourist resorts along the coastal zones. But sometimes decisions for tourism development are based only on the potential economic benefit, in spite of the known potential damage to the environment, as in the case of various coral reef resorts. Coastal erosion often affects many coastal infrastructures that have been built for tourism purposes. However, it is often those very infrastructures that have altered dune-replenishment processes (causing beach erosion), modified local currents by building harbour-like structures (causing, for example, the smothering of superficial corals), and led to eutrophication through inappropriate positioning of the resort sewage systems and the often absent treatment of the water discharged. In open waters, shipping for tourism purposes has sometimes been found to cause pollution due to intentional release, and to carry alien invasive species into new environments.

22. While the impact of tourism on coastal resources may already be a serious issue, the degradation of these resources may cause the impoverishment of their diversity, as in the case of mangrove ecosystems adjacent to tourist resorts. This may have significant ecological and economic implications for and displacement of local populations.

23. Impacts on water resources. Freshwater, in general, is already facing growing demand from agriculture, industry and households in many parts of the world. In some locations, such as in many small island developing States, additional demand from tourism, which is extremely water-intensive, is an

/...

acute problem. 9/ The extraction of groundwater by some tourism activities can cause desiccation, resulting in loss of biological diversity. For the quality of water, some activities are potentially more damaging than others. For example, use of motorboats can lead to beach and shoreline erosion, dissemination of aquatic weed nuisances, chemical contamination, and turbulence and turbidity in shallow waters. 10/ The disposal of untreated effluents into surrounding rivers and seas can cause eutrophication. It can also introduce a large amount of pathogens into the water body, making it dangerous for swimming. Naturally nutrient-rich ecosystems, such as mangroves, can perform buffer and filtering functions to a certain extent. 11/

24. Waste management. Disposal of waste produced by the tourism industry may cause major environmental problems. Such waste can generally be divided into: sewage and waste-water; chemical wastes, toxic substances and pollutants; and solid waste (garbage or rubbish). The effect of direct discharge of untreated sewage leading to eutrophication, oxygen deficit and algal blooms has already been pointed out.

25. Environmental impact of travel. Travel to and from international tourist destinations causes significant environmental impacts through pollution and production of "greenhouse" gases. A high proportion of international tourist travel is by air. Such travel is believed to be the most environmentally costly per passenger-kilometre, although the true costs are difficult to assess accurately, as are the impacts on biological resources and their diversity.

#### B. Socio-economic and cultural impacts of tourism

26. Influx of people and related social degradation. Increased tourism activities can cause an influx of people seeking employment or entrepreneurial opportunities, but who may not be able to find suitable employment. This may cause social degradation, such as local prostitution, drug abuse and so forth. 12/ In addition, due to the unstable nature of international tourism, communities that come to rely heavily on tourism in economic terms are vulnerable to the changes in the flow of tourist arrivals and may face sudden loss of income and jobs in times of downturn.

---

9/ Report of the Secretary-General on sustainable tourism development in small island developing States (E/CN.17/1996/20/Add.3), submitted to the Commission on Sustainable Development at its fourth session, held in 1996,

10/ Tourism, ecotourism, and protected areas, Hector Ceballos-Lascurain, IUCN, 1996.

11/ Biodiversity and Tourism: Conflicts on the world's seacoasts and strategies for their solution, German Federal Agency for Nature and Conservation ed., 1997.

12/ For further elaboration, see the addendum to the report of the Secretary-General on tourism and sustainable development entitled "Tourism and social development", submitted to the Commission on Sustainable Development at its seventh session, held in 1999.

27. Impacts on local communities. When tourism development occurs, economic benefits are usually unequally distributed amongst members of local communities. There is evidence suggesting that those who benefit are often limited in number and that those who benefit most are often those who were at an economic advantage to begin with, particularly landowners who can afford the investment. Specialist tourism can also involve a relatively small segment of a local community, possibly removing contact of the larger community with the resources in question. In the case of foreign direct investment, much of the profit may be transferred back to the home country. Therefore, tourism can actually increase inequalities in communities, and thus relative poverty. In addition, tourism increases local demand for goods and services, including food, resulting in higher prices and potentially decreased availability for local people. Such trends are often more prevalent where there is a lack of consultation with the peoples and communities involved in tourism.

28. A more direct example of where tourism may conflict directly with the needs and aspirations of local peoples is where the latter are excluded from particular areas given over to tourism, or at least have their rights of access severely curtailed. This is most likely to occur in protected areas created to conserve wildlife. In most cases, however, the designation of such areas as protected, and the exclusion of local people from them, have preceded the development of tourism in such areas, rather than having been a product of it. On the other hand, as in the case of the Maldives, direct conflict can be avoided by isolating the tourism industry from the bulk of the indigenous population. This isolation has been possible in the Maldives because of the availability of a large number of uninhabited islands that can be developed into tourist-resort islands. 13/

29. Impacts on cultural values. Tourism has a highly complex impact on cultural values. Tourism activities may lead to inter-generational conflicts through changing aspirations of younger members of communities who may have more contact with, and are more likely to be affected by, the behaviour of tourists. Furthermore, they may affect gender relationships through, for example, offering different employment opportunities to men and women. Traditional practices and events may also be influenced by the tourist preferences. This may lead to erosion of traditional practices, including cultural erosion and disruption of traditional lifestyles. Additionally, tourism development can lead to the loss of access by indigenous and local communities to their land and resources as well as sacred sites, which are integral to the maintenance of traditional knowledge systems and traditional lifestyles.

---

13/ Tourism and the Environment Case Studies on Goa, India, and the Maldives, Kalidas Sawkar, Ligia Noronha, Antonio Mascarenhas, O.S. Chauhan, and Simad Saeed, Economic Development Institute of the World Bank, 1998.



Annex II

PROVISIONAL AGENDA OF THE FIFTH MEETING OF THE SUBSIDIARY BODY ON  
SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE

1. Opening of the meeting.
2. Organizational matters:
  - 2.1 Election of officers;
  - 2.2 Adoption of the agenda;
  - 2.3 Organization of work.
3. Reports:
  - 3.1 Cooperation with other bodies;
  - 3.2 Independent review of the pilot phase of the clearing-house mechanism;
  - 3.3 Review of the Global Taxonomy Initiative;
  - 3.4 Alien species: guiding principles for the prevention, introduction and mitigation of impacts;
  - 3.5 Specific issues in ongoing work programmes on thematic areas:
    - 3.5.1 Inland waters biological diversity: ways and means to implement the work programme;
    - 3.5.2 Marine and coastal biological diversity: consideration of implementation tools for the programme of work, and analysis of coral bleaching;
    - 3.5.3 Forest biological diversity: status and trends and identification of options for conservation and sustainable use.
4. Priority issues:
  - 4.1 Thematic areas:
    - 4.1.1 Programme of work for dryland, Mediterranean, arid, semi-arid, grassland and savannah biological diversity;
    - 4.1.2 Agricultural biological diversity: assessment of ongoing activities and priorities for a programme of work;

/...

- 4.2 Cross-cutting issues:
  - 4.2.1 Ecosystem approach: further conceptual elaboration;
  - 4.2.2 Development of indicators of biological diversity;
  - 4.2.3 Sustainable use of the components of biological diversity: identification of sectoral activities that could adopt biodiversity-friendly practices and technologies;
- 4.3 Mechanism for implementation:
  - 4.3.1 Establishment of guidelines for the second national reports, including indicators and incentive measures;
  - 4.3.2 Ad hoc technical expert groups: terms of reference, and rosters of experts and proposal on a uniform methodology for their use.
- 5. Draft provisional agenda for the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice.
- 6. Dates and venue of the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice.
- 7. Other matters.
- 8. Adoption of the report.
- 9. Closure of the meeting.

-----