

Annex I

**RECOMMENDATIONS ADOPTED BY THE SUBSIDIARY BODY ON SCIENTIFIC,
TECHNICAL AND TECHNOLOGICAL ADVICE AT ITS SIXTH MEETING**
Montreal, 12- 16 March 2001

VI/1. Ad hoc technical expert groups

The Subsidiary Body on Scientific, Technical and Technological Advice

1. *Notes with satisfaction* the work started by the Ad Hoc Technical Expert Group on Forest Biological Diversity and the progress made towards the organization of the work of the Ad Hoc Technical Expert Group on Marine and Coastal Protected Areas;

2. *Recalls* that, as stated in the introduction of the terms of reference of the Group, contained in the annex to decision V/4 of the Conference of the Parties, the Ad Hoc Technical Expert Group on Forest Biological Diversity should take into account the work of forest-related bodies and forums, including, *inter alia*, the United Nations Framework Convention on Climate Change, the Forest Resources Assessment (FRA) 2000 of the Food and Agriculture Organization of the United Nations and the United Nations Forum on Forests;

3. *Stresses the importance* of organizing the meetings of the ad hoc technical expert groups on mariculture and on dry and sub-humid lands before the sixth meeting of the Conference of the Parties and *requests* the Executive Secretary to continue exploring the possibility of securing the necessary financial resources for these groups;

4. *Encourages* Parties, other Governments and organizations to examine ways in which support could be provided for the ad hoc technical expert groups on mariculture and on dry and sub-humid lands.

VI/2. Marine and coastal biological diversity: progress report on the implementation of the programme of work, including the integration of coral reefs

The Subsidiary Body on Scientific, Technical and Technological Advice,

Taking note of the analysis of the effects of the physical degradation and destruction of coral reefs as contained in annex II to the note prepared by the Executive Secretary for the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (UNEP/CBD/SBSTTA/6/4), drawing upon the suggestions in annex I of the present recommendation, for the integration of the issue of physical degradation and destruction of coral reefs into programme element 2 of the programme of work on marine and coastal biological diversity,

1. *Endorses* the following text as operational objective 2.3, for the integration of coral reefs into programme element 2 of the programme of work on marine and coastal biological diversity:

“Operational objective 2.3.: To gather and assimilate information on, build capacity to mitigate the effects of, and to promote policy development and implementation strategies to address: (i) the biological and socio-economic consequences of physical degradation and destruction of tropical and cold-water coral-reef ecosystems, including identification and promotion of management practices, methodologies and policies to reduce and mitigate impacts upon marine and coastal biological diversity and to restore and rehabilitate damaged coral reef; and in particular (ii) the impacts of coral bleaching and related mortality on coral-reef ecosystems and the human communities which depend upon coral-reef services, including through financial and technical assistance.”

2. *Invites* the Executive Secretary to promote and facilitate the implementation of the specific work plan on coral bleaching, as contained in annex II to the present recommendation and the work plan on physical degradation and destruction of coral reefs as contained in annex I thereto, setting priorities as appropriate, with special emphasis on small island developing States and the least developed States, in collaboration with the International Coral Reef Initiative and its partners, the regional seas programmes of the United Nations Environment Programme, the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization, and other relevant organizations;

3. *Invites* the Executive Secretary to develop further the work plan on physical degradation and destruction of coral reefs as contained in annex I to the present recommendation;

4. *Recommends* that the Conference of the Parties examine the need for support through the financial mechanism to developing country Parties, in particular the least developed and small island developing States among them, for country-driven activities aimed at enhancing capabilities to address the impacts of mortality related to coral bleaching and physical degradation and destruction of coral reefs, including developing rapid response capabilities to implement measures to address coral-reef degradation, mortality and subsequent recovery.

*Annex I***ELEMENTS OF A WORK PLAN ON PHYSICAL DEGRADATION AND DESTRUCTION OF CORAL REEFS***Activities*

(a) *Assessments and indicators.* To provide a comprehensive analysis of the status and trends of global coral-reef ecosystems, taking into account the note by the Executive Secretary on progress report on the implementation of the programme of work on marine and coastal biological diversity, including the integration of coral reefs prepared for the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) (UNEP/CBD/SBSTTA/6/4), the including determination of indicators for continued monitoring and the determination of ecological and socio-economic impacts of coral-reef degradation and destruction.

(b) *Management.* To identify management practices, technologies and policies that promote the conservation and sustainable use of coral-reef ecosystems and their associated marine biological diversity, with a view to addressing recognized threats (i.e., overfishing, coastal development, destructive fishing practices, land-based pollution, marine-based pollution and recreational use) and identifying sustainable management approaches.

(c) *Capacity-building.* To strengthen the capacities of Parties, regions, local communities and other stakeholders to manage sustainably coral-reef ecosystems and their associated marine biological diversity, so as to maintain their ecosystem benefits and to promote awareness and responsible action to prevent and mitigate physical degradation and destruction of coral reefs and their effects on marine biological diversity.

(d) *Financing.* To recognize and promote existing programmes and mobilize further mechanisms for financial and technical development assistance to support implementation of activities addressing the physical degradation and destruction of coral reefs.

(e) *Education and public awareness.* To educate and inform the public, policy makers and other stakeholders of ecological and socio-economic values of coral-reef ecosystems and the importance of an ecosystem approach towards their conservation and sustainable management.

Ways and means

Activities under this operational objective will be implemented primarily at the national and regional levels under the guidance of the Executive Secretary and SBSTTA, and in collaboration with relevant organizations and agencies, recognizing the value of the capacity established through the International Coral Reef Initiative (ICRI) and its operational units.

*Annex II***SPECIFIC WORK PLAN ON CORAL BLEACHING**

Objective: To gather and assimilate information on, build capacity to mitigate the effects of, and to promote policy development and implementation strategies to address the impacts of coral bleaching and related mortality on coral-reef ecosystems and the human communities which depend upon coral reef-services, including through financial and technical assistance.

Activities

1. Information gathering

(a) **Implement and coordinate targeted research programmes, including predictive modelling, that investigate: (1) the tolerance limits and adaptation capacity of coral-reef species to acute and chronic increases in sea-surface temperature; (2) the relationship among large-scale coral-bleaching events, global warming, and the more localized threats that already place reefs at risk; and (3) the frequency and extent of coral-bleaching and related mortality events, as well as their impacts on ecological, social and economic systems.**

Ongoing initiatives

- (i) The Ad Hoc Study Group on Indicators of Coral Bleaching and Subsequent Effects was established in September 2000 under the auspices of the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC/UNESCO) with three major objectives: to develop possible molecular, cellular, physiological, and community indicators of coral bleaching that are reliable in their ability to detect early stress signals; to examine potential mechanisms of reef corals for adaptation/acclimatization to global environmental change; to investigate long-term response of reef corals to large-scale changes in environmental variables. The group will meet annually for three years and distribute findings through annual reports and a final publication.
- (ii) The Global Coral Reef Monitoring Network (GCRMN) is a global network of coral-reef scientists, Governments and local communities for monitoring and assessment of coral reefs, in terms of both biophysical and socio-economic parameters needed for management. GCRMN is co-hosted by the Australian Institute of Marine Science and the World Fish Center (ICLARM). ICLARM also hosts ReefBase, the official database of GCRMN, with data of over 8,000 coral reefs around the world. The United Nations Environment Programme (UNEP), together with IOC/UNESCO, is a sponsor of the GCRMN and a member of the GCRMN Management Group and the GCRMN Scientific and Technical Advisory Committee.
- (iii) GCRMN has developed a comprehensive *Status of Coral Reefs of the World* report to be updated every two years, the most recent edition having been published in October 2000.
- (iv) UNEP, through GCRMN, emphasizes the importance of monitoring socio-economic parameters to achieve sustainable use of coral reef ecosystems. A socio-economic manual has recently been developed (October 2000) for monitoring of these parameters for enhanced management capacity.
- (v) Contributing to GCRMN are existing regional projects. Regional coral-reef monitoring networks within GCRMN exist for the Indian Ocean, the Pacific and the Wider Caribbean funded by the World Bank, with the goal of assisting in the conservation of the rich biodiversity of coral reefs and their socio-economic value, and in the sustainable management of their resources, through a monitoring network.
- (vi) Under the International Coral Reef Action Network (ICRAN), the World Conservation Monitoring Centre (WCMC) and ICLARM are exploring the integration and availability of map-based products through the WCMC website and through ReefBase.
- (vii) Some projects within the CORDIO (Coral Reef Degradation in the Indian Ocean) programme in the Indian Ocean region focus on determining the socio-economic impacts

of coral mortality and options for mitigating these through management and development of alternative-livelihoods projects investigating methodologies for preventing the introduction of invasive alien species may contribute to the overall health of coral-reef ecosystems, and thus to recovery from bleaching. The GloBallast pilot project of the International Maritime Organization (IMO) is identifying prevention measures to combat introductions from ballast water discharges.

Specific tasks in addition to ongoing initiatives

- (i) Provide scientific information on the survival of reef-building corals, including the potentially differing responses of a variety of reef systems (such as barrier and patch reefs) and degrees of isolation, under global warming to allow some prediction of the adaptation and survival of the biological diversity of coral reefs in coming decades.
- (ii) Compile information on existing networks, databases and websites which can provide up-to-date information of the status of coral reefs and the threats thereto; and assess the quality of the data they contain and methodologies used for data collection and analysis.
- (iii) Strengthen networks for data collection and dissemination of information on coral-reef status and interpretation of long-term trends resulting from global climate change and anthropogenic stresses to assist effective management and conservation.
- (iv) Develop further target research programmes that investigate the impacts of coral bleaching and coral mortality events on social and economic systems.
- (v) See activity (k) (i) below.

(b) Implement and coordinate baseline assessments and long-term monitoring to measure the biological and meteorological variables relevant to coral bleaching, mortality and recovery, as well as the socio-economic parameters associated with coral-reef services.

Ongoing initiatives

- (i) The objectives of the Ad Hoc Study Group on Indicators of Coral Bleaching and Subsequent Effects referred to under activity (a) above include the identification of biological indicators that would facilitate long-term monitoring.
- (ii) GCRMN currently serves as a network for coral-reef assessments and monitoring of biological variables relevant to coral bleaching, mortality and recovery, as well as many socio-economic parameters associated with coral-reef services (see activity (a) above).
- (iii) Data repository and dissemination systems such as ReefBase may offer time-line biological data.
- (iv) GCRMN, in coordination with the World Bank, IUCN, the Australian Institute of Marine Science and UNEP regional seas programmes, is targeting existing or planned marine protected areas as the focus of some of their monitoring activities. The sites may offer valuable baseline data and serve for long-term monitoring.
- (v) GCRMN is currently developing a rapid-assessment methodology for socio-economic and biophysical parameters in the Eastern African region, especially for use in developing countries where limited resources do not always allow for regular high-intensive monitoring.
- (vi) The UNEP Division of Environmental Information, Assessment and Early Warning coordinates a variety of information available from remote-sensing technologies and

organizations that facilitates dissemination of such information. They are well suited to coordinating assessment of meteorological variables relevant to coral bleaching, mortality and recovery.

- (vii) WCMC and ICLARM are exploring the integration and availability of map-based products through the WCMC website and through ReefBase.

Specific tasks in addition to ongoing initiatives

- (i) Identify pilot projects that establish training programmes and survey protocols and enhance availability of expert advice at a range of scales, including classification of scale data.
- (ii) Support ongoing assessment and monitoring initiatives, such as those of UNESCO, ICRAN, the regional seas conventions and action plans, GCRMN, UNEP and CORDIO.
- (c) **Develop a rapid response capability to document coral bleaching and mortality in developing countries and remote areas including establishment of training programmes, survey protocols, expert advice, and contingency fund or rapid release of special project funding.**

Ongoing initiatives

- (i) The objectives of the Ad Hoc Study Group on Indicators of Coral Bleaching and Subsequent Effects referred to under activity (a) above include the identification of physiological early-stress indicators in corals.
- (ii) The Sida-SAREC and World Bank programme on coral-reef degradation in the Indian Ocean was initiated as a response to the 1998 coral-bleaching event (CORDIO).
- (iii) GCRMN is currently developing a rapid assessment methodology for socio-economic and biophysical parameters in the Eastern African region, especially for use in developing countries where limited resources do not always allow for regular high-intensive monitoring (ReefCheck).
- (iv) Within the ICRAN strategic plan, it is intended that these capabilities will be developed and made widely available.
- (v) The UNEP Division of Environmental Information, Assessment and Early Warning coordinates a variety of information available from remote sensing technologies and organizations that facilitates dissemination of such information.

Specific tasks in addition to ongoing initiatives

- (i) Develop standardized training modules and manuals on detection and documentation of coral-bleaching events, mortality or recovery monitoring
- (ii) Organize annual meetings in each region on coral-reef assessment and monitoring methods with particular emphasis on documenting coral bleaching, bleaching related mortality and subsequent recovery. These should be integrated into existing programmes, where possible (regional seas conventions and actions plans may have the best capacity to implement these measures).

(d) Encourage and support countries in the development and dissemination of status-of-the-reefs reports and case-studies on the occurrence and impacts of coral bleaching and related mortality.

Ongoing initiatives

- (i) GCRMN has developed a comprehensive *Status of Coral Reefs of the World* report to be updated every two years, the most recent edition having been published in October 2000. This report is largely based on national and regional contributions.
- (ii) The Secretariat of the Convention on Biological Diversity, in accordance with decision V/3, paragraph 7, of the Conference of the Parties to the Convention invited Parties to submit case-studies for dissemination through the clearing-house mechanism. The national reporting mechanism of the Convention on Biological Diversity facilitates the collection of information on the status of coral reefs and case-studies on the occurrence and impacts of coral bleaching.
- (iii) The CORDIO Status Report 2000 offers reporting opportunities on the status of the reefs for Indian Ocean countries. The dissemination of this information through the CORDIO newsletter has facilitated further communication and coordination on local impacts.

Specific tasks in addition to ongoing initiatives

- (i) Support and expand existing networks and initiatives at the regional and national level conducting coral-reef status assessments and monitoring.
- (ii) Strengthen dissemination of existing assessment and monitoring information on status of coral reefs and their threats through existing networks (under the ICRAN strategic plan, this is a core role of GCRMN and ReefBase).
- (e) Extend the use of early-warning systems for coral bleaching by:**
 - (i) Enhancing current NOAA AVHRR Hot Spot mapping by increasing resolution in targeted areas and carrying out ground-truth validation exercises;**
 - (ii) Encouraging space agencies and private entities to maintain deployment of relevant sensors and to initiate design and deployment of specialized technology for shallow-oceans monitoring;**
 - (iii) Making the products of remote sensing readily accessible at low cost to coral-reef scientists and managers worldwide, in particular to those scientists and managers that are based in developing countries.**

Ongoing initiatives

- (i) The UNEP Division of Environmental Information, Assessment and Early Warning coordinates a variety of information available from remote sensing technologies and organizations that facilitates dissemination of such information.
- (ii) Under the ICRAN, WCMC and ICLARM are exploring the integration and availability of map-based products through the WCMC website and through ReefBase that include satellite and aerial imagery.

Specific tasks in addition to ongoing initiatives

- (i) Expand the use of existing early warning systems (e.g. NOAA early warning mapping) and support the development of Web-based early warning systems.
- (ii) Develop local community capacity for remote and local level validation exercises.
- (iii) Develop mechanisms to make accessible high-resolution multi-spectrum imagery worldwide.

2. Capacity-building

(f) Support the training of and career opportunities for marine taxonomists, ecologists, and members of other relevant disciplines, particularly at the national and regional level.

Ongoing initiatives

- (i) Various ongoing training activities not necessarily related to coral bleaching but to coral conservation issues, e.g. the Ramsar Wetlands for the Future training initiative for Latin America and the Caribbean; the regional seas programme for Caribbean protected area managers; various activities supported by aid agencies and global and regional development banks.
- (ii) Many other training activities are carried out as components of wider projects and programmes. GCRMN is building capacity for coral-reef monitoring and assessments through training workshops, especially in developing countries.

Specific tasks in addition to ongoing initiatives

- (i) Further incorporate or support the issue of coral reefs and bleaching in the capacity-building activities of multilateral environmental agreements (e.g. Ramsar Convention, Cartagena Convention) and of their respective contracting parties.
- (ii) Develop standardized training modules and manuals on detection and documentation of coral-bleaching events and subsequent recovery.
- (iii) Organize annual meetings in each region on coral-reef assessment and monitoring methods with particular emphasis on documenting coral bleaching, bleaching-related mortality and subsequent recovery. These should be integrated into existing programmes, where possible.
- (iv) Create scholarship trust funds in each region of the regional seas programmes to provide scholarships at graduate/postgraduate level to at least two people per region to undertake studies on coral-reef ecology and management.
- (v) Promote exchange programmes between countries and/or regions.
- (vi) Promote further coordination and collaboration of ongoing regional activities.
- (vii) Promote the inclusion in national reports under the regional seas conventions, the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change of a section for reporting of ecological and socio-economic impacts of coral-bleaching events.
- (viii) Add coral bleaching to the national biodiversity strategies and action plans under the Convention on Biological Diversity.

(g) Encourage and support multidisciplinary approaches to coral-reef research, monitoring, socio-economics and management.

Ongoing initiatives

- (i) ICRI and GCRMN activities are intended to encourage and support multidisciplinary approaches to coral-reef research, monitoring, socio-economics and management.
- (ii) Regional seas programmes through the ICRAN strategic plan and existing programmes like CORDIO, and the UNEP Caribbean Environment Programme are increasing regional capacity towards monitoring, socio-economics and management, as related to coral bleaching. The four regions currently active under the ICRAN strategic plans are South-East Asia, Pacific, Caribbean and Eastern Africa.

Specific tasks in addition to ongoing initiatives

- (i) Develop a formal network of agencies in developed and developing countries, which agree to an annual exchange of staff in areas relevant to coral-reef management.
- (ii) Gather and assimilate information on existing training programmes on integrated coastal area management, best practices and related issues, relating to sustainable management of coral reefs.
- (iii) Develop and/or expand training opportunities for fishers, protected area managers and related marine resource managers at the national and regional levels, on resource assessment, monitoring, user impact, ecosystem approaches to marine and coastal resource management, surveillance and enforcement, local community integration, and in setting and measuring the achievement of management performance goals and indicators.
- (iv) See activity (k) (ii) below.

(h) Build stakeholder partnerships, community participation programmes, and public-education campaigns and information products that address the causes and consequences of coral bleaching.

Ongoing initiatives

- (i) ICRI and the International Tropical Marine Ecosystems Management Symposium (ITMEMS) are building the foundation of new ICRI action.
- (ii) A number of existing education and capacity-building projects within the regional seas programmes serve to raise awareness regarding coral bleaching.
- (iii) IUCN, the Secretariat of the Convention on Biological Diversity, USAID and WWF have produced a publication *Management of Bleached and Severely Damaged Coral Reefs*, to contribute to effective and immediate management action to aid reef protection and regeneration, and to enhance research to develop the necessary tools and measures for long-term success. In addition, the publication is intended to raise awareness of the urgent need to take all possible actions to reduce the impact of climate change on coral reefs.
- (iv) The WWF approach to worldwide coral-reef conservation (CoralWeb): training of resource managers, increasing education, raising awareness, and implementing site-based reef management projects to help groups of stakeholders achieve their goals in reef

management and sustainable economic development, including through the development of alternatives to destructive practices.

- (v) The International Coral Reef Information Network (ICRIN) is the primary public awareness mechanism of the ICRI, and thus serves to disseminate public information products that address the causes and consequences of coral bleaching.

Specific tasks in addition to ongoing initiatives

- (i) “Bridge the gap between global and local action through the creation of national and sub-regional coral-reef initiatives” (see ICRI and the International Tropical Marine Ecosystems Management Symposium on Building the Foundation of New ICRI Action).
- (ii) Package relevant information from status-of-reefs reports, *Reefs at Risk*, etc., into effective practical materials for the general public, the media, the private sector and policy makers

3. Policy development / implementation

(i) Use existing policy frameworks to implement the multiple conservation measures outlined in the Renewed Call to Action of the International Coral Reef Initiative, and develop and implement comprehensive local-to-national-scale integrated marine and coastal area management plans that supplement marine protected areas.

Ongoing initiatives

As an example, relevant regional activities within the Wider Caribbean are carried out, *inter alia*, in the framework of the:

- Cartagena Convention and its protocols on oil spills, land-based sources of marine pollution and specially protected areas and wildlife
- Regional ICRI Framework for Action
- Association of Caribbean States (ACS)
- Central American Commission on Environment and Development (CCAD)
- CARICOM

Specific tasks in addition to ongoing initiatives

- (i) Assess relevant actions of existing frameworks and how these are directly addressing integrated marine and coastal areas management, in particular coral-reef issues.
- (ii) Integrate in existing policies at the regional and national levels the priority issues identified by ICRI and the International Tropical Marine Ecosystems Management Symposium (ITMEMS).
- (iii) Make use of the regional seas programmes and other regional agreement (i.e. shipping, fisheries, trade and land-based sources of marine pollution) as vehicles to develop and implement policies related to coral-reef management and protection.

(j) Identify and institute additional and alternative measures for securing the livelihoods of people who directly depend on coral-reef services.

Ongoing initiatives

Some projects within the CORDIO programme in the Indian Ocean region focus on determining the socio-economic impacts of coral mortality and options for mitigating these through management and development of alternative livelihoods. Development is needed of further target research projects that investigate the impacts of coral bleaching and mortality events on social and economic systems in other regions.

Specific tasks in addition to ongoing initiatives

- (i) Compile information on the socio-economic impacts of coral bleaching on communities dependent on coral reefs.
- (ii) Support and expand existing projects that assess the impacts of coral bleaching on communities dependent on coral reefs, such as the CORDIO project in the Indian Ocean.
- (iii) Develop pilot projects for transitioning dependent communities to alternative and sustainable livelihoods.

(k) Initiate efforts to develop joint actions among the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, and the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat to:

- (i) **Develop approaches for assessing the vulnerability of coral-reef species to global warming;**
- (ii) **Build capacity for predicting and monitoring the impacts of coral bleaching and related mortality;**
- (iii) **Identify approaches for developing response measures to coral bleaching;**
- (iv) **Implement measures to address coral bleaching and related mortality;**
- (v) **Provide guidance to financial institutions, including the Global Environment Facility (GEF), to support these activities.**

Ongoing initiatives

- (i) The Executive Secretary has transmitted the view to the United Nations Framework Convention on Climate Change (UNFCCC) that there is significant evidence that climate change is a primary cause of the recent and severe extensive coral bleaching, and that this evidence is sufficient to warrant remedial measures being taken in line with the precautionary approach. In this regard, the Secretariat of the Convention on Biological Diversity, the Secretariat of the UNFCCC, and the Intergovernmental Panel on Climate Change (IPCC) have initiated dialogue to explore the integration of biological diversity concerns into the implementation of the UNFCCC and its Kyoto Protocol.
- (ii) GEF Caribbean project on climate change adaptation (CPACC project).

Specific tasks in addition to ongoing initiatives

- (i) Promote and implement joint work plans with other relevant agreements, organizations and initiatives, including the Commission on Sustainable Development, FAO, regional

seas conventions and action plans, regional trade and economic organizations, the Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activities, ICRI and the Man and Biosphere Programme. In particular, assess and coordinate activities that have been agreed within multilateral environmental agreements about coral reefs.

- (ii) Gather the outputs of the Caribbean GEF project on climate change adaptation (CPACC project) as a contribution to activities (k) (i)-(iv) above, and disseminate relevant findings through the clearing-house mechanism and other mechanisms.
- (iii) Further development of response measures to coral bleaching and potential guidance to financial institutions, including the GEF may be needed.

(l) Encourage FAO and regional fisheries organizations to develop and implement measures to assess and mitigate the impacts of sea-surface temperature rise on fisheries.

Specific tasks

- (i) Investigate potentially deleterious effects of changes in oceanographic patterns and resulting impacts on target fish stocks resulting from sea-surface temperature rise.
- (ii) Establish no-fishing zones and limitations on fishing gear to protect breeding grounds and provide fish with a refuge.
- (iii) Enforce legislation prohibiting destructive fishing practices that further damage coral-reef ecosystems.
- (iv) Investigate strategies for management of coral-reef fisheries that are demonstrably sustainable with respect to fished stocks and the ecosystems that produce them (in collaboration with FAO).

(m) Emphasize that coral bleaching can be monitored as an early warning of the impacts of global warming on marine ecosystems and that the collapse of coral-reef ecosystems could impact ecological processes of the larger marine system of which coral reefs are a part.

Specific tasks

- (i) Recognizing that coral bleaching is a cumulative stress response (i.e., global warming is the most widespread stressor, but known human induced stresses exacerbate events), develop education programmes addressing an ecosystem approach to coral-reef management and the relation between ecological parameters of coral reefs, sea-surface temperature rise and other human-induced stresses.
- (ii) Investigate the relationship between coral-bleaching events and long-term meteorological data.
- (iii) Develop educational programmes on the relationship between coral reefs and larger marine systems (e.g., impacts of coral-reef loss on fisheries, local communities etc).

(n) Emphasize the interdependencies and uncertainties in the relationships among marine, terrestrial and climatic systems.

4. Financing

(o) Mobilize international programmes and mechanisms for financial and technical development assistance, as well as national and private sources to support implementation.

Specific tasks

- (i) Promote programmes that identify the relationships among financial and technical development assistance and environmental project funding.
- (ii) Identify financial and technical assistance mechanisms of national and private sources to assist communities impacted by coral bleaching.

Ways and means: Activities under this operational objective will be implemented primarily at the national and regional levels under the guidance of the Executive Secretary and SBSTTA, and in collaboration with relevant organizations and agencies, recognizing the value of the capacity established through ICRI and its operational units. The additional specific tasks will be prioritized as appropriate. The role of the Convention on Biological Diversity will be to act primarily as a facilitator of these activities.

Timing of expected outputs: 2000 onwards (minimum three-year time schedule)

VI/3. Biological diversity of inland water ecosystems

The Subsidiary Body on Scientific, Technical and Technological Advice,

Noting the need to facilitate the progress in the implementation of the programme of work on inland waters and preparation of guidelines for rapid assessment methodologies of the biological diversity of inland water ecosystems, paying special attention to early cooperation with small island developing States,

Noting the successful cooperation between the Convention on Biological Diversity and the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat and the need for the third joint work plan between the two conventions,

Also noting the final report of the World Commission on Dams, *Dams and Development: A New Framework for Decision-Making*, released on 16 November 2000,

Noting further that the Executive Secretary, in pursuance of decision V/2 of the Conference of the Parties, has reviewed the report of the World Commission on Dams and identified linkages between the recommendations of the Commission and the programme of work on biological diversity of inland water ecosystems, as contained in section III of the note by the Executive Secretary on identification of the elements from the final report of the World Commission on Dams that can be introduced in the programme of work on biological diversity of inland water ecosystems (UNEP/CBD/SBSTTA/6/5/Add.1) prepared for the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice,

1. *Requests* the Executive Secretary to prepare a report on the second joint work plan between the Convention on Biological Diversity and the Ramsar Convention, including a draft third joint work plan covering suggestions on the future joint activities for consideration by the sixth meeting of the Conference of the Parties;

2. *Requests* the Executive Secretary to make the report of the World Commission on Dams, *Dams and Development: A New Framework for Decision-Making*, available to the Parties through the clearing-house mechanism so that they can use the scientific and technical tools of the report as appropriate;

3. *Recommends* that the Conference of the Parties take note of the recommendations contained in the report of the World Commission on Dams in regard to the implementation of the programme of work on biological diversity of inland water ecosystems.

VI/4. Alien species that threaten ecosystems, habitats or species

A. Recommendation to the Conference of the Parties

The Subsidiary Body on Scientific, Technical and Technological Advice

Recommends that the Conference of the Parties, at its sixth meeting:

1. Status and trends

1. *Notes* the report on the status, impacts and trends of alien species that threaten ecosystems, habitats and species (UNEP/CBD/SBSTTA/6/INF/11);

2. Guiding Principles for the implementation of Article 8(h)

Recognizing that invasive alien species ^{1/} represent one of the primary threats to biodiversity, especially in geographically and evolutionary isolated ecosystems, such as small island developing States, and that risks may be increasing due to increased global trade, transport, tourism and climate change,

Reaffirming that full and effective implementation of Article 8(h) is a priority,

2. *Notes* the consideration by the Subsidiary Body on Scientific, Technical and Technological Advice of the scientific and technical matters relevant to the Guiding Principles;

3. *Notes* that some non-scientific and technical matters have been identified for its consideration along with options for addressing those matters;

4. *Considers* these options and adopts the Guiding Principles annexed to the present recommendation.

5. *Urges* Parties, other Governments and relevant organizations to promote and implement the Guiding Principles;

3. Relevant international instruments

Acknowledging the contribution to the implementation of Article 8(h) of existing international instruments, such as the International Plant Protection Convention, and relevant international organizations such as the Office International des Epizooties, the regional plant protection organizations, the Food and Agriculture Organization of the United Nations, the International Maritime Organization, the World Health Organization and other international organizations that develop relevant standards and agreements,

Noting, however, in the light of the review of the efficiency and efficacy of existing legal instruments applicable to invasive alien species (UNEP/CBD/SBSTTA/6/6), that there are certain gaps and inconsistencies in the international regulatory framework from the perspective of the threats of invasive alien species to biological diversity,

^{1/} For purposes of this recommendation and the Guiding Principles the term “invasive alien species” shall be deemed to be the same as the term “alien invasive species” as defined in decision V/8 of the Conference of the Parties.

6. *Recommends* that Parties to the Convention on Biological Diversity and other Governments, as appropriate, consider ratifying the revised International Plant Protection Convention;

7. *Welcomes* the preparation by the International Maritime Organization of an international instrument to address the environmental damage caused by the introduction of harmful aquatic organisms in ballast water, and *encourages* additional work to minimize hull fouling as an invasion pathway;

8. *Invites* the International Plant Protection Convention, the Office International des Epizooties, the Food and Agriculture Organization of the United Nations, the International Maritime Organization, the World Health Organization and other relevant international instruments and organizations, as they elaborate further standards and agreements, or revise existing standards and agreements, including for risk assessment/analysis, to consider incorporating criteria related to the threats to biological diversity posed by invasive alien species; and *invites further* such instruments and organizations to report on any such ongoing, planned, or potential initiatives;

9. *Requests* the Subsidiary Body on Scientific, Technical and Technological Advice and other international organizations such as the Global Invasive Species Programme to identify and explore, in light of the inter-sessional work referred to in recommendation VI/4 A and the present recommendation, further specific gaps in the international regulatory framework (including binding and non-binding instruments as well as instruments at the regional level and standards) from a technical perspective of the threats of invasive alien species to biological diversity, including consideration of various pathways for the transmission of invasive alien species, and to report back to the Conference of the Parties at its seventh meeting, taking into account further relevant information arising from the implementation of the present decision;

4. Other options

Reaffirming the importance of national and regional invasive-alien-species strategies and action plans, and of international collaboration to address the threats to biodiversity of invasive alien species and the need for funding as a priority to implement existing strategies,

Noting the range of measures (UNEP/CBD/SBSTTA/6/7) and the need to strengthen national capacities and international collaboration,

(a) National invasive alien species strategies and action plans

10. *Urges* Parties and other Governments, in implementing the Guiding Principles, and when developing, revising and implementing national biodiversity strategies and action plans to address the threats posed by invasive alien species, to:

(a) Identify national needs and priorities;

(b) Create mechanisms to coordinate national programmes;

(c) Review, in the light of the Guiding Principles, relevant policies, legislation and institutions to identify gaps, inconsistencies and conflicts, and, as appropriate, adjust or develop policies, legislation and institutions;

(d) Enhance cooperation between the various sectors that might provide pathways or vectors for the unintended transfer of invasive alien species, in order to improve prevention, early detection, eradication and/or control of invasive alien species, and in particular, ensure communication between focal points of respective relevant international instruments;

(e) Promote awareness of the threats to biological diversity and related ecosystem goods and services posed by invasive alien species and of the means to address such threats, among policy-makers at all levels of government, and in the private sector; quarantine, customs and other border officials; and the general public;

(f) Facilitate the involvement of all stakeholder groups, including in particular local and indigenous communities, and the private sector, as well as all levels of government, in national invasive alien species strategies and action plans, and in decisions related to the use of alien species that may be invasive;

(g) Collaborate with trading partners and neighbouring countries, regionally, and with other countries, as appropriate, in order to address threats of invasive alien species to biological diversity in ecosystems that cross international boundaries, to migratory species, and to address matters of common regional interest;

11. *Encourages* Parties and other Governments, in undertaking this work and, in particular, when developing priority actions, to consider the need to:

(a) Develop capacity to use risk assessment/analysis to address threats of invasive alien species to biological diversity, and incorporate such methodologies in environmental impact assessments, and strategic environmental assessments, as appropriate and relevant;

(b) Develop financial measures, and other policies and tools, to promote activities to reduce the threat of invasive alien species;

(c) Integrate national strategies and action plans that address the threats of invasive alien species, into national biodiversity policies, strategies and action plans, and into sectoral and cross-sectoral policies, strategies and plans, taking into account the ecosystem approach;

12. *Notes* the technical information developed by the Executive Secretary, the Subsidiary Body on Scientific, Technical and Technological Advice and the Global Invasive Species Programme and commends this information to Parties for use in national implementation of Article 8 (h);

(b) *International cooperation*

13. *Urges* Parties, Governments, multilateral organisations and other relevant bodies to consider the potential effects of global change on the risk of invasive alien species to biodiversity, and related ecosystem goods and services and, in particular:

(a) *Invites* the United Nations Framework Convention on Climate Change to consider this matter when it considers measures for adaptation to and mitigation of climate change in particular with respect to the lifestyles of indigenous and local communities;

(b) *Invites* the World Trade Organization, through its Committee on Trade and the Environment, to take this matter into account when considering the impacts of trade and trade liberalization;

(c) *Invites* the Food and Agriculture Organization of the United Nations, the World Health Organization, the United Nations Development Programme, the United Nations Environment Programme, the World Bank and other development agencies to take this matter into account when considering the impacts of land-use change, agriculture, aquaculture, forestry, health and development policies and activities;

14. *Invites* the Convention on the Conservation of Migratory Species of Wild Animals, the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, the Convention on the Conservation of European Wildlife and Natural Habitats, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the World Heritage Convention, and the Man and the Biosphere Programme of the United Nations Educational, Scientific and Cultural Organization, in collaboration with relevant organizations, to promote further the implementation of Article 8(h) within their mandates, through, *inter alia*, the development of guidance, best practices and pilot projects that address the threats of invasive alien species to particular sites or habitats, including means to enhance the capacity of ecosystems to resist or recover from alien species invasions;

15. *Invites* international organizations to develop financial and other measures for the promotion of activities aiming to reduce the harmful effects of invasive alien species;

16. *Decides to* provide additional guidance to the Global Environment Facility regarding the provision of financial resources to help developing countries to strengthen capacity-building for eradication and control of invasive alien species;

17. *Acknowledges* the contribution of the Global Invasive Species Programme to the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice, particularly the provision of technical advice and therefore:

(a) *Welcomes* phase II of the Global Invasive Species Programme and encourages Parties, countries and other organizations to support the work of the Global Invasive Species Programme to minimize the spread and impact of invasive alien species;

(b) *Recommends* continuing cooperation with the Global Invasive Species Programme and *requests* the Executive Secretary to explore the development of arrangements for this further cooperation;

18. *Endorses* the call for an island cooperation initiative and welcomes the offer of New Zealand, the IUCN Invasive Species Specialist Group and the Global Invasive Species Programme to explore means to establish such an initiative;

19. *Welcomes* the initiative of the Council of Europe (Bern Convention) to help the implementation of Article 8 (h), including the development of a European Strategy on Invasive Alien Species;

20. *Welcomes* the initiative by the Working Group on the Phytosanitary Aspects of GMOs, Biosafety and Invasive Species of the Interim Commission on Phytosanitary Measures, and the secretariat of the International Plant Protection Convention, to develop closer relationships to the Convention on Biological Diversity and its work;

(c) *Assessment, information and tools*

21. *Urges* Parties, Governments and relevant organizations, at the appropriate level, with the support of relevant international organizations to promote and carry out, as appropriate, research and assessments on:

- (a) The characteristics of species invasiveness and the vulnerability of ecosystems and habitats to invasion by alien species, and the impact of climate change on these parameters; 2/
- (b) The impact of invasive alien species on biological diversity;
- (c) Analysis of the importance of various pathways for the introduction of invasive alien species;
- (d) The socio-economic implications of invasive alien species particularly the implications for indigenous and local communities;
- (e) The development of environmentally benign methods to control and eradicate invasive alien species, including measures for use in quarantine and to control fouling of ship hulls;
- (f) The costs and benefits of the use of biocontrol agents to control and eradicate invasive alien species;
- (g) Means to enhance the capacity of ecosystems to resist or recover from alien species invasions;
- (h) Priorities for taxonomic work, *inter alia* through the Global Taxonomy Initiative; 3/
- (i) Criteria for assessing risks from introduction of alien species to biological diversity at the genetic, species and ecosystem levels;

22. *Decides* that the clearing-house mechanism will be used to facilitate scientific and technical cooperation on the topics listed under paragraph 21 above, in order to enhance the ability of the clearing-house mechanism to promote and facilitate scientific and technical cooperation, and *invites* the Executive Secretary to explore further with the Global Invasive Species Programme the potential for the latter to be an international thematic focal point for the clearing-house mechanism, in accordance with annex II (c) of decision V/14;

23. *Requests* the Executive Secretary in cooperation with the Global Invasive Species Programme and other relevant organizations to compile information on topics listed under paragraph 21 above, in collaboration with relevant organizations;

24. *Urges* Parties, Governments and relevant organizations, at the appropriate level, to develop and make available technical tools and related information to support efforts for the prevention, early detection, monitoring, eradication and/or control of invasive alien species and to support public awareness-raising and environmental education to the extent possible;

25. *Requests* the Executive Secretary, within the availability of resources and in collaboration with relevant organizations, to support the development and dissemination of technical tools and related information on the prevention, early detection, monitoring, eradication and/or control of invasive alien species through, *inter alia*:

2/ As distinct from the direct effects of climate change on species distribution.

3/ See UNEP/CBD/SBSTTA/6/6, paras. 94 and 95.

(a) Compilation and dissemination of case-studies submitted by Parties, other Governments and organizations, best practices and lessons learned, drawing upon, as appropriate, tools listed in information document UNEP/CBD/SBSTTA/6/INF/3 and the “Toolkit” compiled by the Global Invasive Species Programme (UNEP/CBD/SBSTTA/INF/10);

(b) Further compilation and preparation of anthologies of existing terminology used in international instruments relevant to invasive alien species, and to develop, and update as necessary, a non-legally binding list of terms most commonly used;

(c) Compilation and making available lists of procedures for risk assessment/analysis and pathway analysis which may be relevant in assessing the risks of invasive alien species to biodiversity, habitats and ecosystems;

(d) Identification and inventory of existing expertise relevant to the prevention, early detection, eradication and/or control of invasive alien species, and restoration of invaded ecosystems and habitats, which may be made available to other countries, including the roster of experts for the Convention on Biological Diversity;

(e) Development of databases and facilitated access to such information for all countries including repatriation of information to source countries, through, *inter alia*, the clearing-house mechanism;

(f) Development of systems for reporting new invasions of alien species and the spread of alien species into new areas;

26. *Requests* the Executive Secretary when reporting on the thematic work programmes of the Convention to report specifically on how the threats and impacts of invasive alien species will be addressed;

27. *Notes* that, in implementing this decision, Parties, Governments, the Subsidiary Body on Scientific, Technical and Technological Advice, the Executive Secretary and relevant organizations are referred to annex II of the report of the liaison group meeting on invasive alien species (UNEP/CBD/SBSTTA/6/INF/7);

5. *Activities and capacity-building*

28. *Considers the need* for arrangements to provide financial resources, in accordance with Articles 20 and 21 of the Convention, for activities (such as prevention, assessment, eradication, control and mitigation of invasive alien species), capacity-building and pilot projects, giving priority attention to geographically and evolutionarily isolated ecosystems, and to developing countries and countries with economies in transition, paying particular attention to the needs of the least developed countries and small island developing States, the need for financial support to regional cooperative initiatives, and the need for access to funding for emergency responses to new invasions and for support of existing national strategies and action plans;

29. *Requests* the Executive Secretary to explore means to facilitate capacity enhancement for eradication work on continents and islands.

B. Inter-sessional work

The Subsidiary Body on Scientific, Technical and Technological Advice

1. *Requests* the Executive Secretary to:

(a) Explore ways and means of cooperating with the Office International des Epizooties and the international and regional organizations operating within the framework of the International Plant Protection Convention in the development and periodic review of standards recognized under the Agreement on Sanitary and Phytosanitary Measures of the World Trade Organization;

(b) Explore, for biodiversity-related matters not covered by the above organizations, possible options for facilitating the development of standards, guidelines and recommendations for recognition under the Agreement on Sanitary and Phytosanitary Measures of the World Trade Organization;

2. *Invites* Parties that have not provided their national reports in response to paragraph 8 of decision V/19 to do so as soon as possible, and all Parties, other Governments and relevant bodies to continue to provide case-studies, for dissemination through the clearing-house mechanism.

Annex

GUIDING PRINCIPLES [GUIDELINES] FOR THE PREVENTION, INTRODUCTION AND MITIGATION OF IMPACTS OF ALIEN SPECIES THAT THREATEN ECOSYSTEMS, HABITATS OR SPECIES

Introduction (version 1)

This document provides all Governments and organizations with guidance for developing effective strategies to minimize the spread and impact of invasive alien species. While each country faces unique challenges and will need to develop context-specific solutions, the Guiding Principles [Guidelines] give Governments clear direction and a set of goals to aim toward. The extent to which these Guiding Principles [Guidelines] can be implemented ultimately depends on available resources. Their purpose is to assist governments to combat invasive alien species as an integral component of conservation and economic development. Because these 15 Principles [Guidelines] are non-binding, they can be more readily amended and expanded through the processes under the Convention on Biological Diversity as we learn more about this problem and its effective solutions.

It should be noted that in the Guiding Principles [Guidelines] below, terms are used for which a definition has not yet been developed, pending a decision by the Conference of Parties on the

development of a standardized terminology on alien species, as mentioned in paragraph 14 of decision V/8 adopted by the Conference of the Parties at its fifth meeting. ^{4/}

Also, while applying these Guiding Principles [Guidelines] due consideration must be given to the fact that ecosystems are dynamic over time and so the normal distribution of species might vary without involvement of a human agent.

Introduction (version 2)

This document provides all governments and organizations with guidance for developing effective strategies to minimize the spread and impact of invasive alien species. While each country faces unique challenges and will need to develop context-specific solutions, the Guiding Principles [Guidelines] give governments clear direction and a set of goals to aim toward. The extent to which these Guiding Principles [Guidelines] can be implemented ultimately depends on available resources. Their purpose is to assist governments to combat invasive alien species as an integral component of conservation and economic development. Because these 15 Principles [Guidelines] are non-binding, they can be more readily amended and expanded through the Convention on Biological Diversity's processes as we learn more about this problem and its effective solutions.

It should be noted that in the Guiding Principles [Guidelines] below, terms are used for which a definition has not yet been developed, pending a decision by the Conference of Parties on the development of a standardized terminology on alien species, as mentioned in paragraph 14 of decision V/8 adopted by the Conference of the Parties at its fifth meeting.^{5/}

^{4/} In the interim and for the purpose of these [Guidelines] Guiding Principles, to avoid confusion the following definitions from UNEP/CBD/SBSTTA/6/INF/5 are used: (i) "alien" or "alien species" refers to a species, subspecies or lower taxon, introduced outside its normal past or present normal distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce; (ii) "invasive alien species" refers to an alien species whose establishment and spread threaten ecosystems, habitats or species with economic or environmental harm (For the purposes of the present recommendation, and the guiding principles, the term "invasive alien species" shall be deemed the same as "alien invasive species" in decision V/8 of the Conference of the Parties to the Convention on Biological Diversity.); (iii) "introduction" refers to the movement, by human agency, of a species, subspecies or lower taxon (including any part, gametes, seeds, eggs, propagules that might survive and subsequently reproduce) outside of its natural range (past or present). This movement can be either within a country or between countries; (iv) "intentional introduction" refers to the purposeful movement by humans of a species outside its natural range and dispersal potential (such introductions may be authorized or unauthorized); (v) "unintentional introduction" refers to a species utilizing unwitting humans or human delivery systems as vectors to disperse and become established outside its natural range, and (vi) "establishment" refers to the process of a species in a new habitat successfully reproducing at a level sufficient to ensure continual survival without infusion of new genetic material from outside the system.

^{5/} In the interim and for the purpose of these [Guidelines] Guiding Principles, to avoid confusion the following definitions from UNEP/CBD/SBSTTA/6/INF/5 are used: (i) "alien" or "alien species" refers to a species, subspecies or lower taxon, introduced outside its normal past or present normal distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce; (ii) "invasive alien species" refers to an alien species whose establishment and spread threaten ecosystems, habitats or species with economic or environmental harm (For the purposes of the present recommendation, and the guiding principles, the term "invasive alien species" shall be deemed the same as "alien invasive species" in decision V/8 of the Conference of the Parties to the Convention on Biological Diversity.); (iii) "introduction" refers to the movement, by human agency, of a species, subspecies or lower taxon (including any part, gametes, seeds, eggs, propagules that might survive and subsequently reproduce) outside of its natural range (past or present). This movement can be either within a country or between countries; (iv) "intentional introduction" refers to the purposeful movement by humans of a species outside its natural range and dispersal potential (such introductions may be authorized or unauthorized); (v) "unintentional introduction" refers to a species utilizing unwitting humans or human delivery systems as vectors to disperse and become established outside its natural range, and (vi) "establishment" refers to the process of a species in a new habitat successfully reproducing at a level sufficient to ensure continual survival without infusion of new genetic material from outside the system.

Also, while applying these Guiding Principles [Guidelines] due consideration must be given to the fact that ecosystems are dynamic over time and so the normal distribution of species might vary without involvement of a human agent.

Furthermore, the precautionary approach referred to in these Guiding Principles [Guidelines] is that set forth in principle 15 of the 1992 Rio Declaration on Environment and Development.

A. General

Guiding principle 1: Precautionary approach (version 1)

[Given the unpredictability of the pathways and impacts on biological diversity of invasive alien species, efforts to identify and prevent unintentional introductions as well as decision concerning intentional introductions should be based on the precautionary approach within a risk analysis framework. The precautionary approach should also be applied when considering eradication, containment and control measures in relation to alien species that have become established. Lack of full scientific certainty about the various long-term implications of an invasion should not be used as a reason for postponing or failing to take appropriate eradication, containment and control measures.]

Guiding principle 1: Precautionary approach (version 2)

[Given the unpredictability of the pathways and impacts on biological diversity of invasive alien species, efforts to identify and prevent unintentional introductions as well as decision concerning intentional introductions should be based on the precautionary approach initially set forth in principle 15 of the 1992 Rio Declaration on Environment and Development and further elaborated in, *inter alia*, the preamble of the Convention on Biological Diversity and Article 10 of the Cartagena Protocol, including within a risk analysis framework. The precautionary approach should also be applied when considering eradication, containment and control measures in relation to alien species that have become established. For the purpose of these Guiding Principles [Guidelines] the precautionary approach is defined as follows: lack of scientific certainty about the various long-term implications of an invasion should not be used as a reason for postponing or failing to take appropriate eradication, containment and control measures.]

Guiding principle 2: Three-stage hierarchical approach

1. Prevention is generally far more cost-effective and environmentally desirable than measures taken following introduction and establishment of an invasive alien species.
2. Priority should be given to preventing the introduction of invasive alien species, between and within States. If an invasive alien species has been introduced, early detection and rapid action are crucial to prevent its establishment. The preferred response is often to eradicate the organisms as soon as possible (principle 13). In the event that eradication is not feasible or resources are not available for its eradication, containment (principle 14) and long-term control measures (principle 15) should be implemented. Any examination of benefits and costs (environmental, economic and social) should be done on a long-term basis.

Guiding principle 3: Ecosystem approach

Measures to deal with invasive alien species should, as appropriate, be based on the ecosystem approach, as described in decision V/6 of the Conference of the Parties.

Guiding principle 4: State rights and responsibilities (version 1)

[1. States should recognize the risk that they may pose to other States as a potential source of invasive alien species, and should take appropriate individual and cooperative actions to minimize that risk, including the provision of any available information on invasive behaviour or invasive potential of a species. In accordance with Article 3 of the Convention on Biological Diversity, and principle 2 of the 1992 Rio Declaration on Environment and Development, States have the sovereign right to exploit their own resources pursuant to their own environmental policies and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction. In the context of invasive alien species, activities that could be a risk for another State include:

(a) The intentional or unintentional transfer of an invasive alien species to another State (even if it is harmless in the State of origin); and

(b) The intentional or unintentional introduction of an alien species into their own State if there is a risk of that species subsequently spreading (with or without a human vector) into another State and becoming invasive.

2. To help States carrying out activities under paragraph 1 (a) or (b) above, States should identify, as far as possible, species that could become invasive and make such information available to other States.]

Guiding principle 4: State responsibility (version 2)

[States should recognize the risk that they may pose to other States as a potential source of invasive alien species, and should take appropriate individual and cooperative actions to minimize that risk, including the provision of any available information on invasive behaviour or invasive potential of a species. In accordance with Article 3 of the Convention on Biological Diversity, and principle 2 of the 1992 Rio Declaration on Environment and Development, States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.]

Guiding principle 5: Research and monitoring

In order to develop an adequate knowledge base to address the problem it is important that States undertake research on and monitoring of invasive alien species, as appropriate. These efforts should attempt to include a baseline taxonomic study of biodiversity. In addition to these data, monitoring is the key to early detection of new invasive alien species. Monitoring should include both targeted and general surveys, and benefit from the involvement of other sectors, including local communities. Research on an invasive alien species should include a thorough identification of the invasive species and should document (a) the history and ecology of invasion (origin, pathways and time-period), (b) the biological characteristics of the invasive alien species, and (c) the associated impacts at the ecosystem, species and genetic level and also social and economic impacts, and how they change over time.

Guiding principle 6: Education and public awareness

Raising the public's awareness of the invasive alien species is crucial to the successful management of invasive alien species. Therefore, it is important that States should promote education and public awareness of the causes of invasion and the risks associated with the introduction of alien species. When mitigation measures are required, education and public-awareness-oriented programmes

should be set in motion so as to engage local communities and appropriate sector groups in support of such measures.

B. Prevention

Guiding principle 7: Border control and quarantine measures

1. States should implement border controls and quarantine measures for alien species that are or could become invasive to ensure that:

(a) Intentional introductions of alien species are subject to appropriate authorization (principle 10);

(b) Unintentional or unauthorized introductions of alien species are minimized;

[(c) States should put in place appropriate measures to control introductions of invasive alien species within the State.]

2. These measures should be based on an assessment of the risks posed by alien species and their potential pathways of entry. Existing appropriate governmental agencies or authorities should be strengthened and broadened as necessary, and staff should be properly trained to implement these measures. Early detection systems and regional and international coordination are essential to prevention.

Guiding principle 8: Exchange of information

1. States should assist in the development of an inventory and synthesis of relevant databases, including taxonomic and specimen databases, and the development of information systems and an interoperable distributed network of databases for compilation and dissemination of information on alien species for use in the context of any prevention, introduction, monitoring and mitigation activities. This information should include incident lists, potential threats to neighbouring countries, information on taxonomy, ecology and genetics of invasive alien species and on control methods, whenever available. The wide dissemination of this information, as well as national, regional and international guidelines, procedures and recommendations such as those being compiled by the Global Invasive Species Programme should also be facilitated through, *inter alia*, the clearing-house mechanism of the Convention on Biological Diversity.

2. The States should provide all relevant information on their specific import requirements for alien species, in particular those that have already been identified as invasive, and make this information available to other States.

Guiding principle 9: Cooperation, including capacity-building

Depending on the situation, a State's response might be purely internal (within the country), or may require a cooperative effort between two or more countries. Such efforts may include:

(a) Programmes developed to share information on invasive alien species, their potential uneasiness and invasion pathways, with a particular emphasis on cooperation among neighbouring countries, between trading partners, and among countries with similar ecosystems and histories of invasion. Particular attention should be paid where trading partners have similar environments;

(b) Agreements between countries, on a bilateral or multilateral basis, should be developed and used to regulate trade in certain alien species, with a focus on particularly damaging invasive species;

(c) Support for capacity-building programmes for States that lack the expertise and resources, including financial, to assess and reduce the risks and to mitigate the effects when introduction and establishment of alien species has taken place. Such capacity-building may involve technology transfer and the development of training programmes;

(d) Cooperative research efforts and funding efforts toward the identification, prevention, early detection, monitoring and control of invasive alien species.

C. Introduction of species

Guiding principle 10: Intentional introduction (version 1)

[No first-time intentional introduction of an alien species should take place without authorization from a competent authority unless it is known that an alien species poses no threat to biological diversity. A risk assessment, including an environmental impact assessment, should be carried out as part of the evaluation process before coming to a decision on whether or not to authorize a proposed introduction to the country or to new areas within a country. States should make all efforts to knowingly permit only those species that are unlikely to cause unacceptable harm to ecosystems, habitats or species. The burden of proof that a proposed introduction is unlikely to cause such harm should be with the proposer of the introduction. Authorization of an introduction may, where appropriate, be accompanied by conditions (e.g. preparation of a mitigation plan, monitoring procedures, payment for assessment and management, or containment requirements). The precautionary approach should be applied throughout all the above-mentioned measures.]

Guiding principle 10: Intentional introduction (version 2)

[No first-time intentional introduction of an alien species should take place without authorization from a competent authority unless it is known that an alien species poses no threat to biological diversity. A risk assessment, including an environmental impact assessment, should be carried out as part of the evaluation process before coming to a decision on whether or not to authorize a proposed introduction. States should make all efforts to knowingly permit only those species that are unlikely to cause unacceptable harm to ecosystems, habitats or species. Authorization of an introduction may, where appropriate, be accompanied by conditions (e.g. preparation of a mitigation plan, monitoring procedures, payment for assessment and management, or containment requirements). The precautionary approach should be applied throughout all the above-mentioned measures.]

Guiding principle 10: Intentional introduction (version 3)

[No first-time intentional introduction of an alien species should take place without authorization from a competent authority unless it is known that an alien species poses no threat to biological diversity. A science-based risk assessment, including an environmental impact assessment, should be carried out as part of the evaluation process before coming to a decision on whether or not to authorize a proposed introduction. States should make all efforts to knowingly permit only those species that are unlikely to cause unacceptable harm to ecosystems, habitats or species. Authorization of an introduction may, where appropriate, be accompanied by conditions (e.g. preparation of a mitigation plan, monitoring procedures, payment for assessment and management, or containment requirements).]

Guiding principle 11: Unintentional introductions

1. All States should have in place provisions to address unintentional introductions (or intentional introductions that have become established and invasive). These could include statutory and regulatory measures and establishment or strengthening of institutions and agencies with appropriate responsibilities. Operational resources should be sufficient to allow for rapid and effective action.
2. Common pathways leading to unintentional introductions need to be identified and appropriate provisions to minimize such introductions should be in place. Sectoral activities, such as fisheries, agriculture, forestry, horticulture, shipping (including the discharge of ballast waters), ground and air transportation, construction projects, landscaping, aquaculture, tourism, the pet industry and game-farming, are often pathways for unintentional introductions. Environmental impact assessment of such activities should address the risk of unintentional introduction of invasive alien species. Wherever possible, an assessment of the risks of the unintentional introduction of invasive alien species should be conducted for these pathways.

D. Mitigation of impacts*Guiding principle 12: Mitigation of impacts*

Once the establishment of an invasive alien species has been detected, States, individually and cooperatively, should take appropriate steps such as eradication, containment and control, to mitigate adverse effects. Techniques used for eradication, containment or control should be safe to humans, the environment and agriculture as well as ethically acceptable to stakeholders in the areas affected by the invasive alien species. Mitigation measures should take place in the earliest possible stage of invasion, on the basis of the precautionary approach. [An individual or organization responsible for the introduction of invasive alien species should bear the costs of control measures and biological diversity restoration where it is established that they failed to comply with the national regulatory environment.] Hence, early detection of new introductions of potentially or known invasive alien species is important, and needs to be combined with the capacity to take rapid follow-up action.

Guiding principle 13: Eradication

Where it is feasible, eradication is often the best course of action to deal with the introduction and establishment of invasive alien species. The best opportunity for eradicating invasive alien species is in the early stages of invasion, when populations are small and localized; hence, early detection systems focused on high-risk entry points can be critically useful while post-eradication monitoring may be necessary. Community support is often essential to achieve success in eradication work, and is particularly effective when developed through consultation. Consideration should also be given to secondary effects on biological diversity.

Guiding principle 14: Containment

When eradication is not appropriate, limiting the spread (containment) of invasive alien species is often an appropriate strategy in cases where the range of the organisms or of a population is small enough to make such efforts feasible. Regular monitoring is essential and needs to be linked with quick action to eradicate any new outbreaks.

Guiding principle 15: Control

Control measures should focus on reducing the damage caused as well as reducing the number of the invasive alien species. Effective control will often rely on a range of integrated management

techniques, including mechanical control, chemical control, biological control and habitat management. [Most control measures will need to be regularly applied, resulting in a recurrent operating budget and the need for a long-term commitment to achieve and maintain results. In some instances, biological control may give long-term suppression of an invasive alien species without recurrent costs, but should always be implemented in line with existing national regulations, international codes] [and principle 10 above].

VI/5. Scientific assessments: development of methodologies and identification of pilot studies

The Subsidiary Body on Scientific, Technical and Technological Advice

1. *Notes* that assessment processes should:
 - (a) Be initiated as the result of an intergovernmental recommendation and conducted within a set of agreed procedures, rules, and frameworks;
 - (b) Be focused, cost-effective and transparent, avoid duplication and be delivered in a timely manner;
 - (c) Be based on scientific principles;
 - (d) Be based on existing knowledge and address knowledge gaps;
 - (e) Be management and/or policy-oriented;
 - (f) Engage a wide spectrum of societal interest;
 - (g) Be carried out at the appropriate level(s) (global, regional, national, local), focusing on the regional level, and with the involvement of appropriate expertise, in line with decision V/20, paragraph 31;
 - (h) Contribute to capacity-building and enhancement of institutions and promote scientific cooperation, education and public awareness;
2. *Notes* the usefulness of ongoing and planned assessments, including the Millennium Ecosystem Assessment, the Global International Waters Assessment, the Forest Resources Assessment 2000, the reports of the Food and Agriculture Organization of the United Nations on the state of the world's plant and animal genetic resources, and the IUCN Red List assessment process, and *stresses* the importance of using information from such assessments and of strengthening linkages with relevant organizations;
3. *Stresses* the importance of including information from assessments in national reports and of making use of existing information from national reports in assessment processes;
4. *Notes also* the value of well-targeted rapid assessments to address urgent and emerging issues;
5. *Notes further* that there is insufficient understanding of biodiversity, its value and its rates of loss, especially at ecosystem levels, of biodiversity thresholds in relation to ecosystem functioning, and of the effectiveness of measures to address biodiversity loss, and *agrees* to develop a programme to address progressively these topics and reduce the degree of uncertainty associated with them, and to include the identification or development of criteria and indicators of these topics in assessment processes, as appropriate;
6. *Decides*, in order to advance assessments on current priority issues, and to test a range of methods and modalities for assessments, in accordance with paragraph 29 (b) of decision V/20 and paragraphs 1 and 9 of the present recommendation, to initiate assessments on the following issues:

(a) Forest biological diversity, through the ongoing work of the ad hoc technical expert group established by decision IV/4, which should draw upon, *inter alia*, the results of the Forest Resources Assessment 2000;

(b) The development of rapid assessment methods for the biodiversity of inland water ecosystems, in cooperation with the Ramsar Convention on Wetlands;

(c) The development of rapid assessment methods for marine and coastal biological diversity, in particular guidelines for ecosystem evaluation and assessment;

(d) The impacts of invasive alien species;

(e) Interlinkages between biological diversity and climate change, in line with recommendation VI/7 of the Subsidiary Body on Scientific, Technical and Technological Advice, on biological diversity and climate change, including cooperation with the United Nations Framework Convention on Climate Change;

7. *Invites* the Millennium Ecosystem Assessment to integrate assessments of the following topics in its work:

(a) The interrelationship between biodiversity and climate change, in line with recommendation VI/7 of the Subsidiary Body on Scientific, Technical and Technological Advice;

(b) Inland water biological diversity, its uses and threats;

(c) Further aspects of marine and coastal biological diversity, drawing upon the work already conducted by the Subsidiary Body on Scientific, Technical and Technological Advice;

(d) Further aspects of forest biodiversity, as identified by the Subsidiary Body on Scientific, Technical and Technological Advice on the basis of the work of the Ad Hoc Technical Expert Group on Forest Biological Diversity; ^{6/}

8. *Requests* the Executive Secretary to make the necessary arrangements in consultation with the Bureau of the Subsidiary Body on Scientific, Technical and Technological Advice, taking into account available resources, to carry out the pilot assessment projects referred to above, drawing on the project briefs provided in annex III of the note by the Executive Secretary on scientific assessment (UNEP/CBD/SBSTTA/6/9), as appropriate;

9. *Agrees* to improve scientific assessment processes under the Convention, in particular with regard to the selection of experts, peer review, and approval of findings, and, in this context, *decides*:

(a) To make better use of the clearing-house mechanism and the roster of experts;

(b) To seek greater involvement from leading national and regional scientific organizations and institutions;

^{6/} This might include the impact of forest fragmentation on forest biological diversity.

(c) To draw upon the procedures outlined in annexes IV and VI of the report of the Oslo brainstorming meeting on scientific assessments (UNEP/CBD/SBSTTA/6/9/Add.1);

10. *Requests* the Executive Secretary to identify ways and means to strengthen the assessment capacities of developing countries;

11. *Requests* the Executive Secretary to develop and maintain a list of ongoing and proposed assessments within the various thematic programmes and cross-cutting areas of the Convention;

12. *Agrees* to undertake the review of the assessments in paragraphs 6 and 7 of the present recommendation;

13. *Agrees also* to consider progress reports from these and other relevant assessments, as a standing item at its meetings, and to review methodologies in the light of experience;

14. *Recommends* that the Conference of the Parties, at its sixth meeting, examine the need for financial resources to support the assessment processes under the Convention, including through guidance to the financial mechanism, as appropriate.

VI/6. The Global Taxonomy Initiative: programme of work

The Subsidiary Body on Scientific, Technical and Technological Advice,

Recognizing the importance of the Global Taxonomy Initiative in all of the work programmes of the Convention, as evidenced at each working group at the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice,

Recognizing also the difficulties experienced in securing long-term stable donor funding for the post of Programme Officer for the Global Taxonomy Initiative with the Convention Secretariat,

1. *Recommends* that the Conference of the Parties at its sixth meeting:

(a) *Endorses* the programme of work for the Global Taxonomy Initiative, as annexed to the present recommendation, and the further submission and elaboration of potential pilot projects, including those listed in the progress report by the Executive Secretary on the Global Taxonomy Initiative (UNEP/CBD/SBSTTA/6/INF/4);

(b) *Urges* Parties, Governments, international and regional organizations, and other relevant organizations to promote, and, as appropriate, carry out, the programme of work;

(c) *Invites* the Executive Secretary to encourage the involvement of global, regional and subregional networks and partnerships to support Parties, Governments and relevant organizations in carrying out the programme of work;

(d) *Considers* capacity development at the national and regional levels as a driving force in implementing the programme of work;

(e) *Examines* the need for financial resources, including through guidance to the financial mechanism, for activities and capacity-building for the implementation of the programme of work;

2. *Requests* the Conference of the Parties to investigate methods for enabling the permanent support for the post of Programme Officer for the Global Taxonomy Initiative and for a yearly meeting of the Coordination Mechanism of the Initiative;

3. *Requests* the Executive Secretary, with the assistance of the Coordination Mechanism, to provide information to Parties and Governments on the process for developing projects, including pilot projects, aimed at implementing the programme of work.

*Annex***PROGRAMME OF WORK FOR THE GLOBAL TAXONOMY INITIATIVE****Contents**

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I. INTRODUCTION

1. Broadly understood taxonomy is the classification of life, though it is most often focused on describing species, their genetic variability, and their relationships to one another. For the purposes of the Convention taxonomy is taken in its broadest sense and is inclusive of systematics and biosystematics at the genetic, species and ecosystem levels (see the annex to the present report).

2. The Global Taxonomy Initiative (GTI) covers the taxonomic work required to support the implementation of the Convention at all three levels of biodiversity (genetic, species and ecosystem), and is concerned with all organisms, i.e. plants, animals and micro-organisms.

3. The GTI has been established under the Convention on Biological Diversity (CBD) to underpin decision-making in conservation of biological diversity, sustainable use of its components and equitable sharing of the benefits derived from the utilization of genetic resources, by addressing:

(a) The lack of taxonomic information on the identity of components of biological diversity in many parts of the world; and

(b) The need to build capacity for taxonomic activity in all regions, but especially developing countries, including reference materials, databases, and taxonomic expertise relevant to the objectives of the Convention on Biological Diversity.

4. In its decision V/9, adopted at its fifth meeting, the Conference of the Parties requested the Executive Secretary to draft as a component of the Strategic Plan ^{7/} for the Convention on Biological Diversity a programme of work for the GTI defining timetables, goals, products and pilot projects.

5. The Conference of the Parties established the GTI specifically to support its work programmes in the thematic areas (marine and coastal biological diversity, agricultural biodiversity, dry and sub-humid land biological diversity, inland water biological diversity, forest biological diversity and mountain biological diversity), and in the cross-cutting issues (invasive alien species, access and benefit sharing, scientific assessments, indicators, traditional knowledge) under the Convention.

6. Section II contains a programme of work for the GTI. It presents successively (i) the overall objectives of the programme of work, (ii) activities addressing taxonomic needs assessments at the global, regional and national levels, and (iii) targeted actions within the broader work programmes of the Convention on Biological Diversity.

II. PROGRAMME OF WORK

A. Overall objectives

1. *What has the Conference of the Parties asked the GTI to be?*

7. In its decision III/10, on identification, monitoring and assessment, the Conference of the Parties established the need for specific action under the Convention in capacity-building in taxonomy, through its endorsement of SBSTTA recommendation II/2.

^{7/} The Strategic Plan of the Convention is currently under development within the Secretariat, and progress will be reported at the sixth meeting of the Conference of the Parties.

8. In decision IV/1 D, the Conference of the Parties endorsed, as initial advice, a set of Suggestions for Action to develop and implement a Global Taxonomy Initiative. The Conference of the Parties stressed the urgent need for the further implementation of recommendation II/2 of the Subsidiary Body on Scientific, Technical and Technological Advice concerning capacity-building in all fields of taxonomy to assist in the implementation of the Convention, through the incorporation of targeted actions in its work plan, including promoting regional activities to set regional agendas.

9. In decision V/9, the Conference of the Parties adopted a range of activities for the GTI, including the preparation of a programme of work for the GTI defining timetables, goals, products and pilot projects. The format adopted has taken into account that provided in decision V/20, on the operations of the Convention, which specifies the following parameters:

- (a) Planned activities;
- (b) The expected products;
- (c) The timing of each of these activities and products;
- (d) The actors carrying out these activities and cooperation with relevant organizations;
- (e) The mechanisms used to realize and/or support the goals and activities, or to generate the expected products; and
- (f) Financial, human-resource and other capacity requirements.

10. Also in decision V/9, the Conference of the Parties urged that “pilot projects” for the GTI be submitted to the Executive Secretary and the GTI Coordination Mechanism by Parties, Governments and relevant organizations by 31 December 2001.

2. *What should the GTI achieve?*

11. The GTI should seek to provide the key information required for the implementation of the Convention on Biological Diversity, particularly Article 7, on identification and monitoring, through increasing the fundamental biological data essential to underpin the conservation, sustainable use and equitable sharing of the benefits from the utilization of biological diversity. That is, to address the problems of insufficient knowledge of all components of biological diversity (including their classification, description, value and function) and lack of taxonomic capacity, to overcome what has been termed “the taxonomic impediment”.

12. In formulating the programme of work to achieve this end, the GTI should provide the global platform to help accelerate current taxonomic efforts in areas identified as high priority by countries and regional groupings of countries.

13. The GTI programme of work has been designed to focus on supplying the needed taxonomic information to support the major work areas of the Convention, and the need to support capacity-building to ensure the ability of countries to undertake the priority taxonomic work required to implement the Convention.

14. This programme of work is intended to fulfil the following functions:

- (a) To contribute to the implementation of the Convention’s Strategic Plan (in preparation).

(b) To set operational objectives with clear expected outputs and ways and means through which to achieve the set objectives;

(c) To provide the rationale for the choice of the operational targets, with indications of opportunities for further elaboration of the programme of work; and

(d) To serve as a guide to all biodiversity stakeholders on specific objectives to which they can contribute individually or collectively, at the local, national or international level.

3. *Operational objectives*

15. In considering the following five operational objectives, it will be necessary to address capacity-building specifically with regard to human resources, systems and infrastructure needs in taxonomy, at the local, national, regional and global levels. It has been recognized that, for operational objectives 4 and 5, further setting of priorities might be required for integration within the work plans of the Convention:

Operational objective 1: Assess taxonomic needs and capacities at national, regional and global levels for the implementation of the Convention.

Operational objective 2: Provide focus to help build and maintain the human resources, systems and infrastructure needed to obtain, collate and curate the biological specimens that are the basis for taxonomic knowledge.

Operational objective 3: Facilitate an improved and effective infrastructure/system for access to taxonomic information; with priority on ensuring that countries of origin gain access to information concerning elements of their biodiversity.

Operational objective 4: Within the major thematic work programmes of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components.

Operational objective 5: Within the work on cross-cutting issues of the Convention, include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components.

16. Diagram 1 summarizes the rationale and linkages between the above operational objectives.

17. It is important to note that the planned activities described in sections B and C below are designed to be mutually reinforcing in achieving the overall objective of the GTI, and outputs from one objective will help facilitate greater achievement of the other activities. Particular stress may be placed upon the necessity outlined in planned activity 3 for capacity development at national, regional and global levels, with emphasis on facilitating and fostering both South-South and South-North partnerships and information exchange.

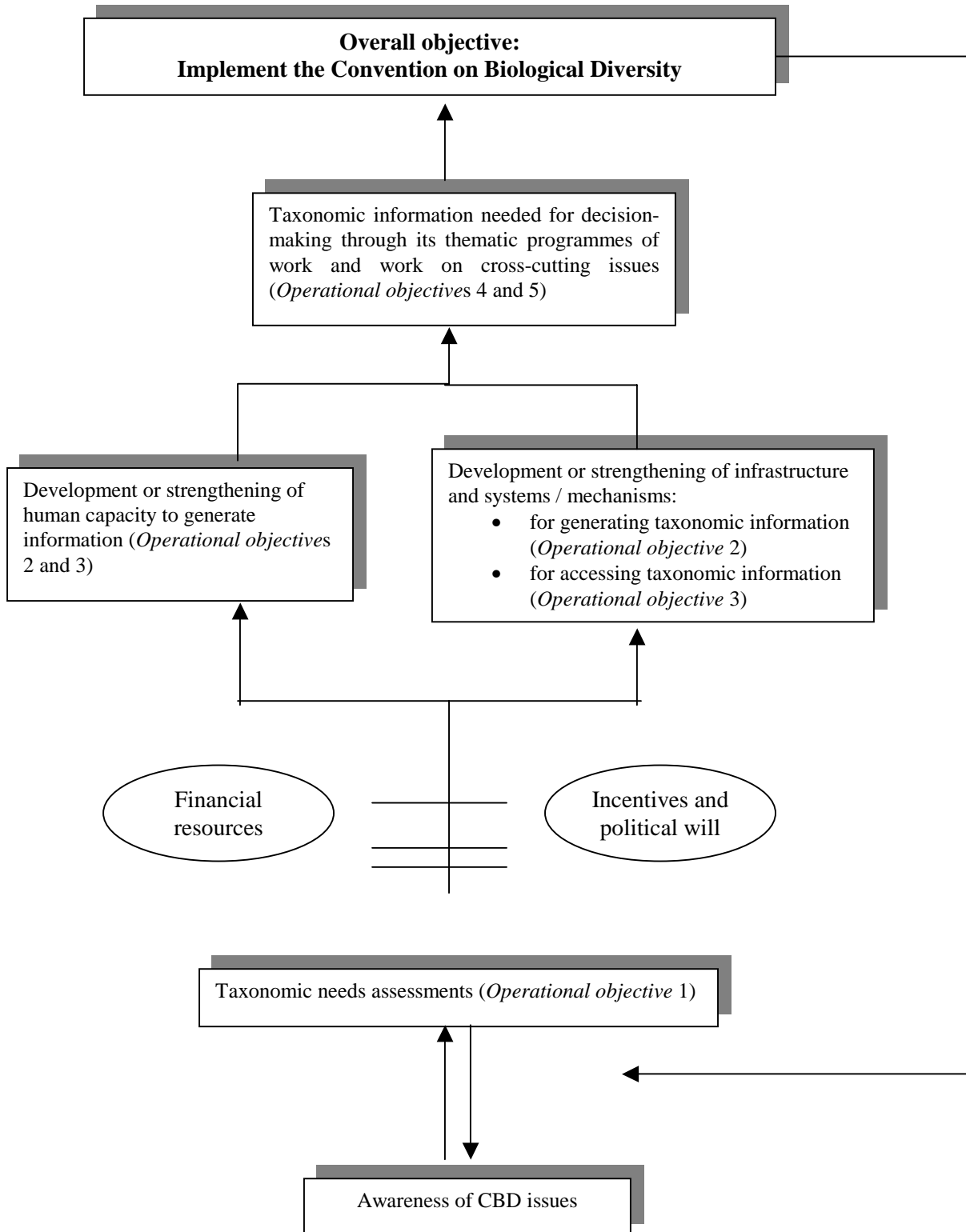


Diagram 1. Rationale and linkages between the five operational objectives of the programme of work

A. Taxonomic needs assessments at the national, regional and global levels

1. Operational objective 1 - Assess taxonomic needs and capacities at national, regional and global levels for the implementation of the Convention

1.1. *Planned activity 1: Country-based taxonomic needs assessments and identification of priorities*

(i) *Rationale*

In its decision IV/1 D, the Conference of the Parties recognized the need for each country to conduct a national taxonomic needs assessment. Furthermore, in decision V/9, the Conference of the Parties urged Parties, Governments and relevant organizations to undertake as a priority activity, assessments of national taxonomic capacity to identify and, where possible, quantify national and regional-level taxonomic impediments and needs. Assessments should be undertaken within the framework of undertaking the necessary planning to produce or update national biodiversity strategies and action plans under the Convention. To this end, the needs assessments will be required to clearly articulate how the lack of taxonomic information and/or capacity is an impediment to the implementation of national biodiversity strategies and action plans.

The Global Environment Facility (GEF) has been requested to support developing countries in undertaking the necessary needs assessments upon which to base action. (Decision III/5 provides additional guidance to the GEF to provide financial resources to developing countries for country-driven activities and programmes, targeting capacity-building, including taxonomy, to enable developing countries to develop and carry out an initial assessment for designing, implementing and monitoring programmes. Decision V/9 urges eligible Parties and consortia of eligible Parties to seek resources for the agreed priority actions, including needs assessments, through the financial mechanism.)

(ii) *Outputs*

Each country would provide through their national biodiversity strategies and action plans, as well as through national reports to the Conference of the Parties, a report on their taxonomic capacity and priority needs, which would then be disseminated through the Convention's clearing-house mechanism.

(iii) *Timing*

In its decision V/9, the Conference of the Parties urged Parties, Governments and relevant organizations to undertake this priority activity and, while not setting a specific timeframe, requested Parties to report on their actions to the Conference of the Parties at its sixth meeting (April 2002). As this is a fundamental part of the process of clearly identifying solutions to current lack of capacity it is very important for all countries to complete their needs assessment as soon as possible. Full or preliminary needs assessments should be reported to the Executive Secretary by December 2001 for report to the Conference of the Parties at its sixth meeting, and final assessments by December 2002.

(iv) *Actors*

National Governments, with the support of national and international organizations and institutions as needed, would take primary carriage of this activity. The Executive Secretary would compile completed assessments into an information paper for the sixth meeting of the Conference of the Parties.

(iv) *Mechanisms*

The GEF was requested to provide funds for countries to undertake their needs assessments as part of a broader biodiversity information requirements process. An approach for the development of a standardized framework and instruments will facilitate compilation and comparison of information for baseline assessments and ongoing monitoring. As initial advice, a list of issues to be addressed has been developed by DIVERSITAS, and was provided to SBSTTA at its fourth meeting (UNEP/CBD/SBSTTA/4/INF/7).

(v) *Financial, human resources and other capacity requirements*

National Governments will be required to fund this activity, potentially with additional support from donors. SBSTTA recommends that the Conference of the Parties examine the need for financial resources, including through guidance to the financial mechanism.

(vi) *Pilot projects*

The development of guidelines for the preparation of country-based taxonomic needs assessments, with specific advice on the integration within the overall implementation of national biodiversity strategies and action plans, is proposed as a pilot project to be undertaken by a relevant international organization or consortium of organizations.

1.2. *Planned activity 2: Regional taxonomic needs assessments and identification of priorities*

(i) *Rationale*

Ideally, country-level needs assessments provide the core input into the development of an assessment of regional capacity, the gaps in capacity across the region, and finally the setting of priority actions to fill the gaps. In many regions of the world it will be advantageous to pool resources and to act cooperatively in building taxonomic capacity to support conservation and decision-making. Regional activities in taxonomy have been supported by the Conference of the Parties in decisions III/10, IV/1 D and V/9, which all identify regional level activities as a major activity for the GTI. Decision III/10 endorsed recommendation II/2 of the SBSTTA, which sought to prioritize strengthening of regional and sub-regional networks for taxonomy, regional collaboration and regional and sub-regional training programmes. Decision IV/1 D stressed the urgent need for the further implementation of recommendation II/2 of the SBSTTA concerning capacity-building in all fields of taxonomy to assist in the implementation of the Convention, through the incorporation of targeted actions in its work plan, including promoting regional activities to set regional agendas. Decision V/9 also called for the identification of national and regional priority taxonomic information requirements. Furthermore, decision V/9 called for short-term activities, including regional meetings of scientists, managers and policy-makers to prioritize the most urgent global taxonomic needs and facilitate the formulation of specific regional and national projects to meet the needs identified.

(ii) *Outputs*

Combined with best available information on national taxonomic needs (if possible national taxonomic needs assessments), regionally agreed plans of action, that provide identified priorities, will provide a clear focus for activities under the GTI. To develop such plans of action regional workshops will be held, under the general guidance of the Executive Secretary and the GTI coordination mechanism. The challenge of the workshops will be to blend academic advice and perspective with country needs to fulfil its obligations under the Convention.

(iii) *Timing*

Two regional workshops, one in Africa and one in Central America, have taken place in 2001. Planning for a workshop in Asia, which it is hoped will also be held in 2001, has begun. Other meetings, including in South America, North America, Europe and a second one in Africa, are being discussed.

Ideally the GTI should endeavour to hold all regional workshops by the end of 2001, preferably by December 2001 as input to discussions at the sixth meeting of the Conference of the Parties.

(iv) *Actors*

National governments, taxonomic institutions and global, regional and bilateral funding agencies are the main actors in the development of regional taxonomic needs assessments and priorities.

(v) *Mechanisms*

Existing or proposed regional biodiversity projects, as well as national biodiversity strategies and action plans, will provide a key mechanism for identification of the most urgent taxonomic information requirements at the regional level. The development of regional taxonomic needs assessments and priorities is best facilitated through regional workshops supported by prior research into country level capacity, compiled into regional syntheses. Active regional networks of taxonomists would be best placed to facilitate the compilation of national needs assessments into cohesive regional syntheses.

(vi) *Financial, human resources and other capacity requirements*

The Government of Sweden, through the Swedish International Development Cooperation Agency (SIDA), has funded two regional workshops in 2001. No sources of funding have been agreed at this stage for additional workshops.

(vii) *Pilot projects*

Existing or proposed activities (or elements of activities) in some regions could be considered as pilot studies in the preparation of regional based taxonomic needs assessments, such as SABONET and SAFRINET in southern Africa, and BOZONET in Eastern Africa. However these existing activities need to be broadened to include all taxa, as well as input from the full range of biodiversity stakeholders needing taxonomic information. It is intended that the outputs from each regional workshop will be shared with all future workshops in order to facilitate clear and unambiguous, readily achievable pilot projects.

1.3. *Planned activity 3: Global taxonomic needs assessment*

(i) *Rationale*

Given the nature of taxonomic activity, and the lack of knowledge of key groups of organisms with global distributions of importance to humankind and biodiversity concerns, a global dimension is critical. It is widely recognized that generally there is very little data available on global diversity and distribution patterns, and where it does exist it is usually in non-standardized formats that may restrict its usefulness. Agreed global cooperation to finalize taxonomic work on globally important groups should involve both developed and developing countries, and will provide a major input into development of capacity-building initiatives. The global taxonomic needs assessment can result from a compilation of the regional taxonomic needs assessments, with activity to provide some agreed priority actions that can be undertaken at the global level.

(ii) *Outputs*

A concise global plan of action using the outputs from the regional workshops, with the advice and support of international organizations and the GTI Coordination Mechanism.

(iii) *Timing*

Progress towards production of a draft global plan of action on priority groups for study should be reported to the Executive Secretary by December 2001, as input to discussions at the sixth meeting of the Conference of the Parties. A draft plan should be finalized by December 2002.

(iv) *Actors*

National Governments, taxonomic institutions and global, regional and bilateral funding agencies are the main actors in the development of global taxonomic needs assessments and priorities. At the global level organisations such as, but not limited to, FAO, IUCN, UNEP-WCMC, UNESCO, the Ecosystem Conservation Group (ECG), and programmes such as BioNET INTERNATIONAL, DIVERSITAS, the Global Biodiversity Information Facility (GBIF), Species 2000, and Systematics Agenda 2000 International among others, will also have key roles to play.

(v) *Mechanisms*

A workshop focusing on global level taxonomic priorities should be organized, perhaps through the Ecosystem Conservation Group and GBIF. The taxonomic requirements of the Millennium Ecosystem Assessment should be a significant focus of setting global priorities. Such a workshop could be held in a developing country to highlight their special needs.

(vi) *Financial, human resources and other capacity requirements*

Funding should be sought for this activity from Parties and key intergovernmental and non-governmental science based institutions interested in this activity. SBSTTA recommends that the Conference of the Parties examine the need for financial resources, including through guidance to the financial mechanism

(vii) *Pilot projects*

Some pilot projects already exist that address some elements of this activity, such as ECOPORT, Species 2000, and the developing GBIF projects.

1.4. *Planned activity 4: Public awareness and education*

(i) *Rationale*

The need to raise awareness and to educate on the importance of taxonomy to underpin the Convention is critical to the success of the Global Taxonomy Initiative, and, within the programme of work, it is necessary to identify and target those groups who would benefit from increased awareness and education. In developing a public awareness and education package it will be necessary to balance the needs for formal education against the need for wider public awareness-raising. This activity will best be developed in conjunction with the activity under way following decision V/17 on education and public awareness, being carried out jointly by the Secretariat of the Convention on Biological Diversity and UNESCO. This joint activity will provide the focus for public awareness and education on taxonomy within the Convention through the development of a specific module on taxonomy. The module would test out techniques to develop regionally appropriate public awareness tools to help remove the

taxonomic impediment, which would be refined in the later stages of the education and public awareness activity under the Convention, and should focus on educational materials for training to facilitate implementation of the Convention.

(ii) *Outputs*

A package of materials and activities aimed at broadening public understanding of the importance of taxonomy in achieving the objectives of the Convention. Examples could include a brochure on the GTI, enhancement of Web pages, tutorials for education managers, popular scientific films, etc. A special focus on using the public awareness activity to acquire new levels of taxonomic information, through, *inter alia*, public involvement in parataxonomic activity, should form part of these initiatives.

(iii) *Timing*

Activities will be planned in 2001.

(iv) *Actors*

At the global level this activity could be jointly executed by the Convention Secretariat and UNESCO, but with prime carriage for this project by regional networks in conjunction with key taxonomic institutions that already have considerable experience in public-awareness programmes, and have indicated a willingness to participate in GTI activities.

(v) *Mechanisms*

Toolkits addressing particular taxonomic issues will be developed by the lead agencies for trial in selected regions of developing and developed countries. A key mechanism will involve participatory activity by local communities to strengthen the training and awareness raising for parataxonomists.

(vi) *Financial, human resources and other capacity requirements*

This work element will be undertaken under the Global Initiative on Biodiversity Education and Public Awareness being elaborated by the Convention Secretariat and UNESCO, as called for in decision V/17 of the fifth meeting of the Conference of the Parties

(vii) *Pilot projects*

Pilot projects should be developed within the joint public-awareness activity of the Convention Secretariat and UNESCO. The recent activities of Systematics Agenda 2000 International and BioNET-INTERNATIONAL in this area could also be expanded into pilot projects under the GTI.

B. Targeted actions

2. *Operational objective 2 - Provide focus to help build and maintain the systems and infrastructure needed to obtain, collate and curate the biological specimens that are the basis for taxonomic knowledge.*

2.1 *Planned activity 5: Global and regional capacity-building to support access to and generation of taxonomic information*

(i) *Rationale*

A significant impediment to greatly increasing the world's taxonomic base for the implementation of the Convention, and indeed more effectively utilizing the current taxonomic knowledge, lies in the limited capacity in many nations, and the decreasing taxonomic capacity world-wide. A key objective of the GTI should thus be to address the global and regional capacity-building needs, particularly of developing countries. There are two main areas of concern that need to be addressed simultaneously:

- Human capacity-building; and
- Infrastructure capacity-building.

Human capacity-building requires major increases in training programmes for taxonomists and parataxonomists throughout the world, for it is now well established that the "taxasphere", the world's global taxonomic expertise, is currently shrinking just at the time when we need it to advance our knowledge base rapidly.

Maintaining and improving the existing taxonomic infrastructure can be achieved only through adequate funding, and new strategies are required to make optimal use of our past investments, while minimizing the costs and maximizing the benefits of future investments. In its decisions IV/1 D and V/9, the Conference of the Parties has urged countries to establish or consolidate regional and national taxonomic reference centres. There is a need to explore globally how the best possible outcomes for improving taxonomic capacity can be achieved. The GTI should address at the global and regional levels the coordination of collections infrastructure within countries and regions leading to improvements of long-term infrastructure regionally. Furthermore, such strategic planning should therefore encourage the creation or strengthening of national and regional taxonomic reference centres.

(ii) *Outputs*

Increased human and institutional taxonomic capacity directed at meeting the needs of implementing the Convention.

(iii) *Timing*

Activities need to begin immediately and be included in all work elements throughout the programme of work, with priority in covering the major upcoming work areas of the Convention in a timely manner, such that increases in capacity are achieved prior to the major element of work being undertaken.

(iv) *Actors*

All Governments, international and national funding agencies, biosystematic institutions and taxonomic organizations have a role to play. Expert institutions in developed and developing countries and their professional staff with expertise in taxonomic groups around the world have much to offer in terms of

capacity-building. Within planned activities 1 and 2 above, the development of national and regional taxonomic priorities, detailed regional priorities for capacity-building, both human and institutional, should be addressed.

(v) *Mechanisms*

In its decision III/10, the Conference of the Parties endorsed SBSTTA recommendation II/2, concerning capacity-building for taxonomy, in which the GEF was requested to provide funds for training programmes, strengthening reference collections, making information housed in collections available to countries of origin, producing and distributing taxonomic guides, strengthening infrastructure and disseminating taxonomic information through, *inter alia*, the clearing-house mechanism.

(vi) *Financial, human resources and other capacity requirements*

The financial and human resources requirements of this activity are substantial. Funding needs may extend beyond possible contributions from individual Parties. However, through national and regional priority-setting, it will be possible to take a staged approach to undertaking the work required.

(vii) *Pilot projects*

Consortia of major institutions should participate in the development of pilot projects to identify priority activities including capacity-building and development of information, through facilitating regional conferences to document existing holdings and by designating lead agencies in a collegiate process to maximize taxonomic effort across all groups.

SABONET and BioNET-INTERNATIONAL are two existing examples of projects that could be considered pilots of a regional and global approach respectively, that could be strengthened to provide greater capacity-building activities. The Smithsonian Institution has submitted a potential pilot project on neo-tropical moths that could also be considered for regional capacity-building.

2.2. *Planned activity 6: Strengthening of existing networks for regional cooperation in taxonomy*

(i) *Rationale*

To facilitate the development of cooperative programmes that increase taxonomic capacity in developing countries through fostering North-South and South-South collaboration.

Taxonomic capacity in terms of both human and institutional capacity varies widely between countries and regions. Although many developed countries have relatively comprehensive reference collections and a number of experts, no single country has a complete taxonomic inventory of national biodiversity, nor experts in all relevant taxonomic groups. In many cases, developing countries have very little or no physical reference collections of local biodiversity, nor trained personnel. Much of the existing reference material from developing countries resides in the expert institutions of the developed world, as do the experts in particular taxonomic groups. However, even in developed countries taxonomy has been under-resourced for many years, leading to a general decline in infrastructure, and a dearth of younger professionals.

In order to facilitate taxonomic capacity-building to underpin the Convention on Biological Diversity, cooperative programmes need to be established and/or strengthened between the countries with the expertise and reference materials and those without. A number of regional networks that facilitate cooperation between countries in building taxonomic capacity in certain taxonomic groups currently exist, e.g., SABONET, a cooperative network between 10 countries in southern Africa focused on

flowering plants. The most comprehensive network currently in existence is that fostered by BioNET-INTERNATIONAL, the Global Network for Taxonomy. This initiative currently has seven extant sub-regional networks covering some 120 countries, with another four under development, and a further five planned. It is envisaged that these 16 networks will provide a global coverage of collaborative North-South and South-South networks for taxonomic capacity building. The Global Network for Taxonomy is a donor-funded programme and the rate of network establishment is dependent on adequate continued funding. In establishing subregional cooperative networks, BioNET-INTERNATIONAL works through official governmental endorsement and comprehensive needs assessment activities to establish regional and national priorities.

(ii) *Outputs*

A global network, ideally comprised of increasingly self-sufficient subregional networks, that covers all taxa. While the actual capacity-building initiatives should have a finite project-based life, ideally the networks themselves would remain in perpetuity once established and underpinned by member country Governments.

(iii) *Timing*

Given that the lack of taxonomic capacity is a severe impediment to the abilities of countries to meet their obligations under the Convention on Biological Diversity, and that most taxonomic capacity can readily be shared and utilized across institutional and national boundaries, it follows that building of taxonomic capacity can best be facilitated by sub-regional cooperative networks and global partnerships. Therefore plans for strengthening and/or building of regional networks should at least be in place by December 2002, particularly ensuring that existing relevant networks become fully operational across the full spectrum of taxonomic groups. Strategies should be in place to complete the global coverage by December 2002. In addition, over the next five years, taxonomic institutions should look for opportunities to build capacity-development partnerships, particularly between institutions in developed and developing countries.

(iv) *Actors*

Existing regional and sub-regional networks, with assistance from organizations such as BioNet INTERNATIONAL and UNESCO, and with regional and extra-regional partner organizations and networks, could be utilized to build a more complete coverage. These networks should play the role of implementing mechanisms, such that the GTI has access to, and interaction with all relevant taxonomic institutions within a subregion.

To facilitate this development the expert institutions of the developed world that house the relevant subregional taxonomic reference materials and information, and the professional staff with expertise in taxonomic groups from these subregions, should be actively involved.

(v) *Mechanisms*

An agreed strategy on strengthening and building networks to ensure global coverage both geographically and by taxon group is a huge undertaking. Different countries and regions have different levels of capacity, and different taxonomic needs and priorities. Existing subregional networks can serve as implementing mechanisms for improving taxonomic capacity in developing countries. These existing networks need to be broadened in scope, and the establishment of the remaining networks currently under development or in the planning stages needs to be undertaken as soon as possible. This will require completion of needs assessments and priority setting for each network, where these do not exist or need updating and/or expansion. Regional taxonomic reference centres that house network reference materials

and host the network's Information and Communications System provide a useful mechanism to prevent duplication of infrastructure, but they require sound means of communication to provide all countries involved with equal access to the information.

(vi) *Financial, human resources and other capacity requirements*

Funding will be required to support the work programmes of the individual networks, but the countries themselves need to endorse the operations and specifically the human resource and institutional costs of maintaining, operating and developing such collaborative networks. These costs will depend on the status of each country's capacity and the scope of the work programmes. Such collaborative networks can be cost-saving mechanisms in certain taxonomic groups/areas because of the 'economies of scale' produced by the sharing of taxonomic capacity, and reduce the need for each country to attempt to build the needed capacity individually.

Ideally the networks should have a dedicated full-time secretariat, but depending on needs, they can be operated on a part-time basis by staff already employed within relevant institutions.

Capacity-building in taxonomy necessarily includes the infrastructure capacity to house reference material, together with all of the reference material and equipment to enable identifications.

(vii) *Pilot projects*

Three pilot projects can be proposed. The first pilot project could work with one of the existing BioNET-INTERNATIONAL networks and evaluate the current structure, mechanisms and operations of the network to assess its ability to expand to fully meet the objectives of the GTI in underpinning the Convention on Biological Diversity. Currently, many of the existing BioNET-INTERNATIONAL networks are focused on micro-organisms and invertebrates, often with an agricultural orientation, and as such would need to be expanded to include all taxon groups and relevant institutions. The second pilot project could be undertaken in partnership with BioNET-INTERNATIONAL in the establishment of new networks designed to meet the requirements of the Convention. The third project is currently under formulation under the name BOZONET and is an eastern African taxonomic capacity-building project for botany and zoology.

3. *Operational objective 3 -Facilitate an improved and effective infrastructure/system for access to taxonomic information; with priority on ensuring that countries of origin gain access to information concerning elements of their biodiversity.*

3.1. *Planned activity 7: Develop a coordinated global taxonomy information system*

(i) *Rationale*

Existing taxonomic information is widely scattered and not centrally available. This activity will firstly identify the current status of major taxonomic information systems in particular their major foci, and plan a coordinated approach to the development of a global taxonomic information infrastructure, as the major element of the GTI under the Convention's clearing-house mechanism.

(ii) *Outputs*

An agreed strategy to develop information services that optimizes access to taxonomic information systems world-wide. This strategy would also include common standards for exchange of data and consideration of intellectual property rights.

(iii) Timing

To be developed by December 2001 as an input to discussions by the sixth meeting of the Conference of the Parties.

(iv) Actors

Actors will include ECOPORT, GBIF, Species 2000, the Integrated Taxonomic Information System (ITIS), Tree of Life, NABIN, ISIS, BIN21, BCIS, BioNET INTERNATIONAL, as well as large-scale biosystematics research institutions and other stakeholders of taxonomic information, in collaboration with the clearing-house mechanism of the Convention on Biological Diversity.

(v) Mechanisms

Assessment of the objectives of each system, and their prospective target audience, as a means to evaluate the fulfilment of the needs of Parties in accessing taxonomic information required under the Convention on Biological Diversity. The existing International Plant Names Index (IPNI) and the Global Plant Checklist (IOPI) among others could provide useful models for developing a global strategy.

(vi) Financial, human resources and other capacity requirements

Sources of funding need to be identified.

(vii) Pilot projects

As a precursor to developing pilot projects it is proposed to hold a workshop that brings together stakeholders of all the existing global and major regional biodiversity information systems to identify overlaps, synergies, and gaps in order to develop a coordinated global strategy for harmonizing the existing systems.

Several pilot projects are already under way including SABONET and Species Analyst, and several potential projects have been put forward in recent international taxonomic meetings, and submitted to the GTI as potential pilot projects, such as GLOBIS, a butterfly information system for the world, and the World Termite Database.

4. *Operational objective 4 - Within the major thematic work programmes of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components.*

It is recognized that taxonomy is fundamental to the thematic areas of the Convention on Biological Diversity through discovery, identification, and documentation of biological diversity. Because there are inadequate global taxonomic resources to meet all demands, it is important to indicate taxonomic priorities within each of the thematic areas of the Convention on Biological Diversity. Such priorities should recognize indigenous knowledge systems where appropriate permission has been obtained. Within existing thematic work programmes, workshops should be conducted in appropriate regions, involving taxonomic experts to identify key taxa for inventory and monitoring programmes. Sufficient flexibility should be maintained in order to respond to possible future modifications of priorities.

4.1. *Planned activity 8: Forest biological diversity*

(i) *Rationale*

In the annex to decision IV/7, on forest biological diversity, containing the work programme on forest biological diversity, under programme element 3 on criteria and indicators for forest biological diversity, the following activity is identified: *Taxonomic studies and inventories at the national level, which provide for a basic assessment of forest biological diversity.*

(ii) *Outputs*

An increased knowledge of the species composition of forests, through national taxonomic studies and inventories. Using this increased knowledge base facilitates selection of criteria and indicators for forest biological diversity and may guide in the selection of sites to be protected and in the valuation of resources.

(iii) *Timing*

As this activity is carried out at the national level there will be variable timetables globally. The second round of national reports for the implementation of the Convention is due in May 2001, and will provide an opportunity for countries to report on taxonomic studies and inventories carried out at the national level which provide for a basic assessment of forest biological diversity.

(iv) *Actors*

National governments and institutions will have the main responsibility, with possible advice from a collaborative partnership of forest members on methodologies for the development of appropriate criteria and indicators. The active involvement of international organizations such as the Center for International Forestry Research (CIFOR), the International Centre for Research in Agroforestry (ICRAF), and the United Nations Forum on Forests (UNFF) will provide useful links between existing initiatives.

(v) *Mechanisms*

In decision IV/7, the Conference of the Parties agreed that countries would review specific indicators of forest biological diversity derived by the major international processes related to sustainable forest management. Depending on the selection of the criteria and indicators chosen, additional taxonomic studies and inventories will then be required.

(vi) *Financial, human resources and other capacity requirements*

These requirements will be country-dependent, and resource requirements and sources will vary.

(vii) *Pilot projects*

To facilitate the implementation of one element of the programme of work on forest biological diversity, a pilot project is proposed in the selection of indicators for below-ground diversity in forests in each of the three forest biomes: tropical, temperate, boreal. While there is a need to continue developing knowledge in many components of forest ecosystems, the least known, and highest priority, is the below-ground biological diversity. It is understood that it plays a major role in contributing to the development and the health of the above-ground biological diversity by, for instance, processing nutrients or minerals that are then made available to, and assimilated by, plant biodiversity.

4.2. *Planned activity 9: Marine and coastal biological diversity*

(i) *Rationale*

Two major elements of taxonomic work within marine and coastal ecosystems can be considered as high priority for achieving the Convention's objectives in marine and coastal systems, namely ballast water organisms, and key organisms for monitoring the health of mangrove systems through their invertebrate fauna. The ballast water organisms sub-element will require, *inter alia*, a focus on pelagic juvenile stages of benthic organisms. The second element focuses on mangroves, which are among the world's most rapidly changing systems. Within the marine and coastal biodiversity programme of work there is a need to develop taxonomic support for baseline monitoring of invertebrate fauna in mangrove systems.

(ii) *Outputs*

Identification aids for quarantine and other officials to identify and monitor the introduction of novel marine organisms.

Taxonomic guides to key invertebrate organisms in mangrove systems to aid management of the continuum from natural to disturbed mangrove ecosystems. Taxonomic data will also assist in selecting sites for protected areas and for resource valuation.

(iii) *Timing*

Within the timeframe of the GloBallast programme, produce basic guides for the identification of major organism groups found in ballast water at major sources.

Within the next three years, develop taxonomic guides to the identification of mangrove invertebrate fauna that can be used as indicators of habitat change.

(iv) *Actors*

The International Maritime Organization (IMO) should take the lead role in the taxonomic work in ballast water, under their GloBallast work programme, which would then be integrated with the activities foreseen under the invasive alien species work of the Convention on Biological Diversity, and the GTI programme of work.

International conventions, in particular the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, and taxonomic institutions with expertise in coastal invertebrates should play a key role in conjunction with national institutions from Parties with significant extent of mangrove ecosystems under threat, in the implementation of the necessary taxonomic work.

(v) *Mechanisms*

The IMO GloBallast work programme could include a taxonomic component for the identification of marine pelagic taxa, including those with adult benthic forms, which will form a key element of the GTI in the marine environment. The International Society for Mangrove Ecology (ISME) could facilitate the development of the work element on mangrove invertebrate fauna, including training workshops of key personnel from taxonomic institutions in tropical areas. Three workshops, one in Africa, one in the neotropics and one in Asia have been suggested and are in preparation for 2001 with support from UNESCO. The International Coral Reef Initiative (ICRI) and its network can assist with regard to coral reefs.

(vi) *Financial, human resources and other capacity requirements*

The IMO GloBallast programme could provide the appropriate resources for a pilot project involving six developing countries.

Funding support is required for the three capacity building workshops as well as appropriate infrastructure support for the mangrove invertebrate taxonomy and production of guides and ICRI work.

(vii) *Pilot projects*

The GloBallast programme is a pilot project under the IMO, with direct relevance to the invasive alien species and GTI programmes of work.

A pilot project focused in south-east Asia on mangrove invertebrates, particularly involving Malaysia, Indonesia and Philippines, could be developed in conjunction with the International Center for Living Aquatic Resources Management (ICLARM) and ISME.

4.3 *Planned activity 10: Dry and sub-humid lands biodiversity*

(i) *Rationale*

Decision V/23 on consideration of options for conservation and sustainable use of biological diversity in dryland, Mediterranean, arid, semi-arid, grassland and savannah ecosystems establishes a programme of work, including, *inter alia*, assessment of the status and trends, identification of specific areas within dry and sub-humid lands of particular value for biological diversity and/or under particular threat, and the further development of indicators. Under each of these activities targeted actions on furthering the knowledge base on the organisms that maintain the crucial soil crust should be developed at national and regional levels, as well as the need for greater knowledge of the micro-organisms in nutrient cycling, and increased taxonomic information of pests and diseases.

Correct identification of indicator taxa, such as crust-forming lichens, often requires special identification aids and techniques, and the development of such tools is necessary for increasing the capacity of rangeland managers to understand their function in maintaining dryland ecosystems. In many parts of the world, there is a need to increase taxonomic capacity to identify the lichens, and to then develop identification tools. It is important that such identification tools be designed in such a way that they can be used by rangeland managers to help in identification of key organisms.

(ii) *Outputs*

Enhanced understanding among agricultural and rangeland managers of lichens as key indicators warning of the advance of soil degradation. This will usually take the form of loss of particular species from the system. Taxonomic work will need to develop easy-to-use identikits for key soil lichens, algae, soil invertebrates, pest insects and other herbivores, and other taxa that will be the harbingers of change.

(iii) *Timing*

By the sixth meeting of the Conference of the Parties, have developed identification aids in consultation with appropriate national taxonomy and management agencies.

(iv) *Actors*

The Convention to Combat Desertification (CCD) and other environmental conventions and their relevant collaborators, international agencies (including International Agriculture Research Centres (IARCs)), rangeland managers and national Governments.

(v) *Mechanisms*

Cooperation with the CCD and other key players among international organizations

(vi) *Financial, human resources and other capacity requirements*

To facilitate global and regional cooperation and synergy in this work, a project which could attract funding from the IARCs, in conjunction with FAO, can be proposed.

(vii) *Pilot projects*

A pilot project could be developed among CCD, FAO and UNEP to assess different biological and biochemical indicators of land degradation. This project would require input from a range of taxonomic experts, including algologists and lichenologists. Input would also be required from soil scientists, who can link abiotic information with the taxonomic information obtained. Results can be distilled to a simple identikit system that will allow local managers to identify key species and determine the health of their arid/semi-arid system.

4.4 *Planned activity 11: Inland waters biological diversity*

(i) *Rationale*

As in all other major ecosystems the current status of taxonomic knowledge in inland waters is varied both geographically, and according to the major taxon groups. For the purposes of the GTI targeted activities in rapidly increasing worldwide knowledge of freshwater fish and invertebrates are proposed as high priority.

(ii) *Outputs*

A series of regional guides to freshwater fish and invertebrates (including adult terrestrial forms where appropriate) as an input to ecosystem monitoring for river and lake health.

(iii) *Timing*

Produce field-usable regional guides within two years for both professional and public use.

(iv) *Actors*

National agencies and taxonomic institutions, especially museums, should play a principal role in the implementation of this activity. International support and coordination could be provided through the UNESCO key science activity "Water and Ecosystems". Parataxonomists, in the form of interested members of the public and school students in a number of countries, have been using the technique to monitor aquatic health. This is an area that could be built upon, and maybe also linked to planned activity 11.

(v) *Mechanisms*

Changes in the species compositions and abundance of macro-invertebrates in freshwater systems are now being studied worldwide as part of approaches to monitoring of ecosystem health. A number of key potential partners are possible for this activity, including from developed and developing country perspectives. The Scientific and Technical Review Panel of the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat should also be involved in this project to provide specialist expertise, and a focus on the concept of using taxonomy to help understand ecological change.

(vi) *Financial, human resources and other capacity requirements*

There is opportunity to build on existing projects here, or assist regional collaboration between existing projects, which would contribute to the implementation of the GTI while simultaneously improving monitoring of ecosystem health.

4.5 *Planned activity 12: Agricultural biological diversity*

(i) *Rationale*

Within the programme of work on agricultural biological diversity, several areas require taxonomic capacity in order to deliver fully on their objectives. The need for taxonomy ranges from classical taxonomy of the species living in agricultural ecosystems, to the taxonomy of wild relatives of agriculturally important species, to access to existing taxonomic information including basic knowledge on the functional relationships between organisms often recorded by taxonomists.

The value of training and knowledge-sharing among researchers, extension workers, farmers and indigenous peoples is highlighted in decision V/5 of the Conference of the Parties to the Convention on Biological Diversity. Within the agricultural biodiversity work programme specific taxonomy-related activities are envisaged in the following subject areas: pollinators; soil and other below-ground biodiversity, to support agricultural production systems, especially in nutrient cycling; and natural enemies of pests and diseases.

As the agricultural biological diversity work programme develops, significant taxonomic activities will need to be integrated within the proposals for work.

(ii) *Outputs*

Outputs would include: easy-to-use keys to families, genera and species of pollinators; automated identification systems for pollinators; development of standard methods for identification of soil biodiversity to different taxonomic levels; increased knowledge of soil biodiversity to aid in the identification of indicators of the “health” of below-ground biological diversity; and taxonomic training for farmers and ecosystem managers.

(iii) *Timing*

Within the agricultural biodiversity work programme the taxonomy related activities are part of the timeframe for the development of the overall activity. Current timeframes are as follows:

(a) *Pollinators* – In order to initiate the process of implementation of the International Initiative for the Conservation and Sustainable Use of Pollinators a planning meeting took place at the

FAO in late 2000. A plan of action will be submitted to SBSTTA before the sixth meeting of the Conference of the Parties, as recommended by the Conference of the Parties in decision V/5;

(b) *Soil biota* – Ongoing efforts by Governments and relevant organizations will develop projects with appropriate timing;

(c) *Pest and disease regulation organisms* – Proposals for activities may be developed by countries and relevant organizations for presentation at the seventh meeting of SBSTTA.

(iv) *Actors*

FAO has been invited by the Conference of the Parties in decision V/5 to lead the International Pollinators Initiative (IPI), and will prepare a proposal for the development of the IPI for the seventh meeting of SBSTTA.

Parties should make contributions on soil biota and organisms involved in pest and disease regulation. In addition, the tropical soil biology and fertility (TSBF) programme hosted by UNESCO in Nairobi is the proposed implementing agency for a full-sized GEF project, which includes major taxonomic components for assessing below-ground biodiversity. Also, the Global Integrated Pest Management (IPM) Facility, based in Rome, which is a programme co-sponsored by FAO, UNEP, UNDP and the World Bank, may contribute as an organisation involved in pest and disease regulation.

(v) *Mechanisms*

The International Pollinators Initiative (IPI) will contain a major taxonomic component, and the project is currently under development.

A major taxonomic element needs to be built into all current and proposed projects dealing with the sustainable use or conservation of agricultural and non-agricultural lands, if we are to advance our knowledge base on the functional aspects of maintaining ecosystem processes.

As concerns organisms involved in pest and disease regulation, a scoping exercise should be undertaken to determine where the limitations exist in terms of taxonomic information, from basic alpha-taxonomy of pests and natural enemies, to how the information is presented and distributed. This work can be carried out by farmers' networks and research institutions, including the IARC system.

(vi) *Financial, human resources and other capacity requirements*

All three elements require resources to be identified within existing and new projects, as well as additional resources to be made available to increase technical capacity in most countries of the world.

(vii) *Pilot projects*

A major UNEP project entitled "Conservation and sustainable management of below-ground biodiversity" in seven countries is currently under assessment by UNEP. A Canadian report "Soil biodiversity: issues for Canadian agriculture" is being prepared and may be a suitable pilot. A pilot project on termites submitted by the Smithsonian Institution could also be considered.

4.6 *Planned activity 13: Mountain biological diversity*

Development of this activity will be undertaken following discussion of this thematic work area at the seventh meeting of the Conference of the Parties. The GTI Coordination Mechanism could play an important role in proactively defining taxonomic needs related to this planned thematic activity.

5. ***Operational objective 5 - Within the work on cross-cutting issues of the Convention include key taxonomic objectives to generate information needed for decision-making in conservation and sustainable use of biological diversity and its components.***

5.1. *Planned activity 14: Access and benefit-sharing*

(i) *Rationale*

The Conference of the Parties, in its decision V/26, identified “Assessment and inventory of biological resources as well as information management” as key capacity-building needs with respect to access and benefit-sharing arrangements. Indeed, the inventory of biological resources could provide useful information in view of the elaboration of measures regarding access to genetic resources and the equitable sharing of benefits arising from their exploitation. In order to carry out this inventory, increased capacity is often needed at the country level. The primary goal of the GTI is to assist countries in carrying out this inventory in a timely and efficient manner. A major element in increasing capacity to properly inventory and access biological resource information is effective information management. Therefore a key element of the GTI must be the development of appropriate information-technology tools to allow access to existing data, as well as to provide efficient entry of new information generated from any increased knowledge.

The more each country can develop its capacity to properly inventory, collect, classify, and then commercialize its biological resources, the greater will be the return of benefits to that country. These four elements (inventory, collection, classification, commercialization) can be seen as a hierarchy of increasing capacity. The GTI will concentrate on developing capacity in the collection and classification of biodiversity. The GTI should include projects designed to develop capacity in collecting and maintaining biological collections, as well as the proper classification and knowledge of the biological resources. Taxonomic information, in particular at the genetic level, will be critical in tracing the origin of resources and living modified organisms (LMOs).

Increasing access to existing information on biological resources outside the country of origin has also been highlighted as a major element of the Global Taxonomy Initiative. In decision V/26, the Conference of the Parties urged countries to adopt measures that are supportive of efforts to facilitate access to genetic resources for scientific, commercial and other uses, and associated knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation and sustainable use of biological diversity.

The first step in facilitating access is provision of information, and the Parties have agreed in decision IV/1 D to a series of actions that would increase access to information world-wide. Operational objective 3 of the present programme of work sets out a plan to begin to address this issue.

(ii) *Outputs*

Interactive catalogues of material available, linked to taxonomic collections in herbaria and museums. Taxonomic support, including at the molecular level, to provide clear identification of specimens in the *ex situ* collections, especially in developing countries, is needed.

A series of country-driven projects could be carried out, combining the development of basic taxonomic capacity and an improved information base on biological resources.

These would assist in developing better linkages between existing initiatives that provide information electronically on genetic resources, as well as new projects to improve the access to, and range of, publicly available taxonomic information. In turn, a basis for the commercialization of components of that biological diversity would be provided.

(iii) *Timing*

Progress in global networking between countries and taxonomic institutions holding significant *ex situ* collections should be accelerated within a five-year timeframe.

Development of pilot projects should occur as soon as possible in 2001.

(iv) *Actors*

National (and international) culture collections, including microbial collections. The IARC system, especially the Consultative Group on International Agricultural Research (CGIAR), should be involved to select priorities for needed taxonomic effort.

Taxonomic institutions in many countries contain significant holdings of *ex situ* materials from other countries, and in particular from developing countries. Botanical gardens hold both dead and live material that may be of considerable interest to the country of origin of that material, and may also develop new or improved conservation techniques that could aid countries of origin in their conservation and sustainable use efforts.

The FAO Commission on Genetic Resources for Food and Agriculture could play a key partnership role.

The Global Biodiversity Information Facility (GBIF) may be usefully involved in this activity.

(v) *Mechanisms*

One of the first most important measures any country can take to encourage the sustainable use of its resources and ensure proper sharing of benefits derived from their exploitation is through developing knowledge regarding their own biodiversity, and in particular full cataloguing of its diversity. Through acknowledging the importance of developing taxonomic capacity and adopting a series of suggested actions and priority activities (in its decisions IV/1 D and V/9), the Conference of the Parties has clearly indicated to Parties, Governments and relevant organizations the major work that needs to be undertaken to build taxonomic capacity within countries.

The basic mechanism for undertaking these actions and activities is through country-driven projects at the national, regional and subregional levels, which are to be implemented with the assistance of developed and developing country institutions that house *ex situ* collections (i.e. herbaria, botanical gardens, museums and zoos), and the financial mechanism. These country-driven projects need to be developed to show clearly how the development of basic taxonomic capacity leads to an improved knowledge base and understanding of the biological resources held by the country, which can then be used to attract the necessary investment in the full range of commercial uses of components of that biological diversity.

Achieving tangible results in the short term will require the promotion of a series of projects that have existing support from within both developing and developed world institutions and that clearly lead to a

conservation or sustainable use outcome. A major action plan should be developed with FAO, IARCs (especially CGIAR) and BioNET-INTERNATIONAL as the key intergovernmental organizations and non-governmental organizations, among others.

(vi) *Financial, human resources and other capacity requirements*

Capacity-building of taxonomic institutions is a costly and ongoing matter, and strategic input to help conservation and sustainable use efforts significantly must be based on those areas where useful outcomes can be demonstrated in the short to medium term. It is to be hoped that demonstrating benefit may then lead to further investment in infrastructure support and development.

New resources are needed to initiate activities, although existing resources within key organizations may be able to be mobilized for the development of an action plan.

5.2. *Planned activity 15: Invasive alien species*

Development of this activity will be undertaken based on priorities identified through GISP phase I and the review of the status of invasive alien species and of ongoing measures addressing invasive alien species under way within the Convention on Biological Diversity.

5.3 *Planned activity 16: Support in implementation of Article 8(j)*

(i) *Rationale*

The Conference of the Parties has acknowledged that traditional biodiversity-related knowledge (TBRK) has the potential to inform the activities of the Convention on Biological Diversity. Before it can do so, indigenous and local communities require protection of their intellectual property in any collaborative efforts aimed at meshing traditional knowledge and science. Given that the GTI has the potential to make TBRK more accessible to a wide range of users, due regard must be given to the concerns raised by indigenous and local communities regarding the right to preserve, protect and manage TBRK, particularly traditional taxonomic knowledge.

In its decision V/16, the Conference of the Parties endorsed a programme of work to implement Article 8(j) based on a number of principles, including full and effective participation of indigenous and local communities, the valuing of traditional knowledge, acknowledgment of spiritual and cultural values and the requirement for prior informed consent from traditional knowledge holders.

Paragraph 17 of that decision requests the Parties to support the development of registers of traditional knowledge, innovations and practices of indigenous and local communities through participatory programmes and consultations with indigenous and local communities, taking into account strengthening legislation, customary practices and traditional systems of resources management, such as the protection of traditional knowledge against unauthorized use.

A number of tasks in the programme of work for the implementation of Article 8(j) have a direct bearing on the proposed activities of the GTI, in particular tasks 1, 2 and 7 in phase 1 and tasks 6, 10, 13, and 16 in phase 2 (decision V/16).

Traditional knowledge systems include taxonomic information, which if used in combination with Linnaean taxonomies could support the GTI. Access to and use of traditional knowledge must have the prior informed consent of the holders of that knowledge and be based on mutually agreed terms. When this has occurred, comparison of indigenous taxonomies and Linnaean taxonomies in different regions

could be made to provide general principles to assist in the conservation and sustainable use of elements of biodiversity in different ecosystems.

(ii) *Outputs*

Regional and subregional guides based on ethical research practices and developed with full and effective participation of indigenous and local communities. These guides could highlight the similarities and differences between the two taxonomies and may be in the form of catalogues and species lists, or be more targeted resource material that provides interpretation information for a wide variety of environmental managers, in particular protected area and conservation managers.

(iii) *Timing*

Preparation of guides to be completed as part of implementation activities under Article 8(j).

(iv) *Actors*

National and subnational governments, indigenous and local groups, indigenous research centres and indigenous non-governmental organizations should take the lead in this work element. Potentially the GBIF could play a lead role in providing a global role in information distribution. Some international and national institutions already hold significant information and have active programs in compiling indigenous and local taxonomies. These institutions, with the full and effective participation of indigenous and local communities, should be encouraged through additional “catalytic” funding to ensure that their research practices are based on agreement between parties and the principle of prior informed assent.

(v) *Mechanisms*

The Convention on Biological Diversity, UNESCO, the International Social Science Council (ISSC) and the International Council of Scientific Unions (ICSU) offer the appropriate platform to develop with the full and effective participation of indigenous and local communities suitable plans of work leading to project development. The Ad Hoc Open-ended Working Group on Article 8(j) should play a key role in advising on the development of projects.

(vi) *Financial, human resources and other capacity requirements*

New resources are required to initiate this activity.

5.4 *Planned activity 17: Support for ecosystem approach and work under the Convention on Biological Diversity on assessment including impact assessments, monitoring and indicators*

(i) *Rationale*

Under the ecosystem approach, a key activity will be the Millennium Ecosystem Assessment. The Millennium Ecosystem Assessment will require considerable scientific effort for the characterization of ecosystems, including better data on key species that comprise ecosystems and their role in maintaining ecosystem processes. In many regions taxonomic knowledge needed to fulfil these efforts is not available, which will therefore require specific activities to be undertaken (created under the GTI). The Millennium Ecosystem Assessment seeks policy-relevant information; the GTI is a policy response to a recognized impediment, or knowledge block, in our system of biodiversity understanding. The GTI seeks to facilitate gathering of the pertinent species information that would be used to characterize ecosystems, including those that help to illustrate the value of goods and services flowing from ecosystems.

The Millennium Ecosystem Assessment will be required to report on issues such as patterns of species and ecosystem diversity – the activities of the GTI in facilitating better knowledge of the species and their distribution will help provide this information. All information fed into the Millennium Ecosystem Assessment will need appropriate geo-referencing – which is a key plank for all activities envisaged under the GTI. The GTI will also be focusing on taxonomic activity in areas of relevance to the Convention, especially the key ecosystem themes. Thus the products of the GTI can complement the Millennium Ecosystem Assessment activity in thematic ecosystems, which in turn may illustrate the extent of removal of the taxonomic impediment – providing a positive feedback process.

The GTI also has relevance to the suite of environmental conventions associated with the Convention on Biological Diversity (e.g., the Convention on the Conservation of Migratory Species of Wild Animals, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Convention on Desertification), and to the Commission on Sustainable Development, all of which have a direct interest in the outcomes of the Millennium Ecosystem Assessment. There is scope for linking envisaged work programmes under the Millennium Ecosystem Assessment with the key action areas under the GTI.

(ii) *Outputs*

Production of taxonomic overviews to help guide the Millennium Ecosystem Assessment to focus on key areas and issues of importance. These overviews can be compiled from work under the other operational objectives, but may need special focus for the global ecosystem context of the Millennium Ecosystem Assessment.

(iii) *Timing*

To be linked with the Millennium Ecosystem Assessment development and programme.

(iv) *Actors*

The Millennium Ecosystem Assessment advisory mechanisms, and the UNEP World Conservation Monitoring Centre (WCMC) and UNESCO as key synthesizers.

(v) *Mechanisms*

The Convention's cross-cutting issue of assessments and the programme of work on indicators of biological diversity include a number of programme elements where input from the GTI would be required, including the development of a menu of indicators in thematic areas and development of methodology sheets, guidelines and training for supporting the development of national monitoring and indicator programmes. Specific input required from the GTI would be in the identification, development and testing of suitable indicators, and priority taxonomic information required as input to scientific assessments.

(vi) *Financial, human resources and other capacity requirements*

The development of financial and human resource requirements will need to be undertaken within the development of specific Millennium Ecosystem Assessment project proposals, as well as through agreed activities in indicator development.

5.5 *Planned activity 18: Protected areas*

Development of this activity will be undertaken following discussion of this cross-cutting work area. The GTI Coordination Mechanism could play an important role in proactively defining taxonomic needs related to this planned activity.

III. MONITORING AND ASSESSMENT OF THE GTI

The GTI Coordination Mechanism has been tasked to assist the Executive Secretary to facilitate international cooperation and to coordinate activities on matters pertaining to the implementation and development of the GTI, and in this role will provide overall monitoring and assessment of the activities undertaken as part of the GTI.

The Parties will provide regular updates on activities under the GTI through the national reporting process under the Convention on Biological Diversity.

VI/7. Biological diversity and climate change, including cooperation with the United Nations Framework Convention on Climate Change

The Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling decisions V/3, paragraphs 3, 5 and annex, V/4, paragraphs 11 and 16-20, V/15, paragraph 6, and V/21, paragraph 3, of the Conference of the Parties,

Emphasizing the urgent need to take prompt action to address climate change as a major cause of loss of biological diversity, which is already evident, in particular in coral-bleaching, and its associated socio-economic consequences,

Also emphasizing that measures that may be taken to mitigate or adapt to climate change may also have important effects, positive or negative, on biological diversity,

Stressing the need for adaptation measures to ensure the long-term integrity of ecosystems, species and ecological processes under conditions of climate change,

Emphasizing also the impact of biodiversity loss on climate change and the contribution that the conservation and sustainable use of biological diversity, through, *inter alia*, avoided deforestation, could make to adapt to or mitigate climate change,

Stressing that overall emissions reduction is the main and most important measure to address climate change,

Recognizing the existence of reliable scientific data that climate change is already impacting on the biological diversity of coral reefs,

1. *Recommends* to the Conference of the Parties at its sixth meeting that there is a need to take immediate actions under the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change to reduce and mitigate the impacts of climate change on the biological diversity of coral reefs and their associated socio-economic effects;
2. *Takes note* of the discussion of the interlinkages between biological diversity and climate change, contained in the discussion note by the Executive Secretary submitted to the Conference of the Parties to the United Nations Framework Convention on Climate Change at its sixth session and the Subsidiary Body on Scientific and Technological Advice of that Convention at the second part of its thirteenth session, held in The Hague, from 13 to 24 November 2000 (UNEP/CBD/SBSTTA/6/11, annex I);
3. *Welcomes* the agreement of the Subsidiary Body on Scientific and Technological Advice to consider this matter at its fourteenth session, scheduled for July 2001, and its invitation to the Parties to the United Nations Framework Convention on Climate Change to submit their views on the issues identified;
4. *Promotes* on the basis of the ecosystem approach a wider assessment of the interlinkages between biological diversity and climate change, in order to develop more comprehensive scientific advice to integrate biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol, including:

(a) The impacts of climate change on biological diversity and the impacts of biodiversity loss on climate change;

(b) The potential impact on biological diversity of mitigation measures that may be carried out under the United Nations Framework Convention on Climate Change and its Kyoto Protocol, and identification of potential mitigation measures that also contribute to the conservation and sustainable use of biological diversity;

(c) The potential for the conservation and sustainable use of biological diversity to contribute to climate adaptation measures;

5. *Initiates*, as a first step in the wider assessment referred to in paragraph 4 above, a pilot assessment to prepare scientific advice to integrate biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol, and, for this purpose, establishes an ad hoc technical expert group in accordance with the *modus operandi* of the Subsidiary Body on Scientific, Technical and Technological Advice and the terms of reference provided in the annex to the present recommendation, to report on progress to the Subsidiary Body at its seventh meeting;

6. *Invites* the Intergovernmental Panel on Climate Change to contribute to this assessment process by preparing a technical paper and identifying experts;

7. *Invites* the Millennium Ecosystem Assessment to incorporate the issues identified in paragraph 4 above, and to report on this matter at the seventh meeting of the Subsidiary Body on Scientific, Technical and Technological Advice;

8. *Invites* the United Nations Framework Convention on Climate Change, as well as the Convention on Migratory Species, the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar), the United Nations Convention to Combat Desertification, the Scientific and Technical Advisory Panel of the Global Environment Facility, the United Nations Forum on Forests and other relevant organizations to contribute to this work;

9. *Requests* the Executive Secretary, in consultation with the Secretariat of the United Nations Framework Convention on Climate Change, to explore the formation of a joint liaison group between the bureau members of the relevant subsidiary bodies of the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity, and their respective secretariats, for the purpose of enhancing coordination between the two conventions including exchange of relevant information, development of a joint work plan to address the interlinkages between climate change and biological diversity, and the organization of a joint workshop to further cooperation and collaborative action between the two conventions;

10. *Requests* the Executive Secretary to inform the secretariats of the United Nations Framework Convention on Climate Change, the Intergovernmental Panel on Climate Change and the Millennium Ecosystem Assessment of these steps taken by the Subsidiary Body on Scientific, Technical and Technological Advice, to convey to them the urgency and importance of the matter, and to invite their continued collaboration, with a view to facilitating the integration of biodiversity considerations in the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol;

11. *Requests* the Executive Secretary to prepare a background paper for the pilot assessment referred to in paragraph 5 above, drawing upon the material in his note on biological diversity and

climate change prepared for the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (UNEP/CBD/SBSTTA/6/11);

12. *Notes* the importance of coordination of policies and programmes relating to climate change and biological diversity at the national level.

Annex

PILOT ASSESSMENT OF THE INTERLINKAGES BETWEEN CLIMATE CHANGE AND BIOLOGICAL DIVERSITY

Terms of reference of the ad hoc technical expert group established in paragraph 5 of recommendation VI/7

1. The ad hoc technical expert group established in paragraph 5 of recommendation VI/7 should, on the basis of the ecosystem approach:

(a) Analyse possible adverse effects on biological diversity of measures that might be taken or are being considered under the United Nations Framework Convention on Climate Change and its Kyoto Protocol;

(b) Identify factors that influence biodiversity's capacity to mitigate climate change and contribute to adaptation and the likely effects of climate change on that capacity;

(c) Identify options for future work on climate change that also contribute to the conservation and sustainable use of biological diversity.

2. The ad hoc technical expert group should develop recommendations based upon a review of possible approaches and tools such as criteria and indicators, to facilitate application of scientific advice for the integration of biodiversity considerations into the implementation of measures that might be taken under the United Nations Framework Convention on Climate Change and its Kyoto Protocol to mitigate or adapt to climate change;

3. In carrying out these tasks, the ad hoc technical expert group should draw upon relevant documents prepared under the Convention on Biological Diversity (including decisions V/3, V/4, and V/6, and UNEP/CBD/SBSTTA/6/11) and the Intergovernmental Panel on Climate Change (IPCC) (including the third assessment review and the *Special Report on Land Use, Land-Use Change and Forestry* (LULUCF)), as well as other available literature;

4. The ad hoc technical expert group should identify areas where further work is needed to improve scientific advice for the integration of biodiversity considerations into the implementation measures to mitigate or adapt to climate change, including (i) further assessment, drawing upon existing knowledge; and (ii) further research; and should identify options for participation of the IPCC and the United Nations Framework Convention on Climate Change in this further work;

5. The ad hoc technical expert group will comprise a regionally balanced group with expertise in the fields of biological diversity and climate change. The experts will be selected by the Executive Secretary in accordance with the *modus operandi* of SBSTTA, in consultation with the SBSTTA Bureau, drawing upon experts nominated by Parties to the Convention on Biological Diversity, scientists involved in the IPCC processes, and experts from indigenous and local communities;

6. The work of the ad hoc technical expert group should be initiated as soon as possible. A progress report should be submitted to SBSTTA at its seventh meeting, and the results of the ad hoc technical expert group's work will be completed by the time of the eighth meeting of SBSTTA and considered by SBSTTA at a meeting prior to the seventh meeting of the Conference of the Parties.

VI/8. Migratory species and cooperation with the Convention on the Conservation of Migratory Species of Wild Animals

The Subsidiary Body on Scientific, Technical and Technological Advice

1. *Recommends* that the Conference of the Parties, with a view to enhancing the integration of migratory species in the programmes of work under the Convention:

(a) *Invites* the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals, and Parties to that Convention, to compile and disseminate through the clearing-house mechanism of the Convention on Biological Diversity case-studies on migratory species and their habitats, relevant to thematic areas and cross-cutting issues under the Convention on Biological Diversity;

(b) *Invites* the Executive Secretary to generate, in collaboration with the Secretariat of the Convention on Migratory Species and relevant organizations, guidance for the integration of migratory species into the national biodiversity strategies and action plans and ongoing and future programmes of work under the Convention on Biological Diversity;

(c) *Examines*, at its sixth meeting, the need for the necessary financial resources to support capacity-building and specific projects aimed at incorporating the conservation and sustainable use of migratory species and their habitats, in accordance with the work programme of the Convention on Biological Diversity and any joint work programme between the Convention on Biological Diversity and the Convention on Migratory Species;

(d) *Urges* Parties to report through their national reports on the extent to which they address migratory species at the national level, and on their cooperation with other range States;

2. *Further recommends* that the Conference of the Parties, with a view to strengthening the role of the Convention on Migratory Species in implementing the Convention on Biological Diversity, *recognizes* the Convention on Migratory Species as the lead partner in conserving and sustainably using migratory species over their entire range and *also recognizes* that the Convention on Migratory Species provides an international legal framework through which range States can cooperate on migratory species issues;

3. *Requests* the Executive Secretary in close collaboration with the Secretariat of the Convention on Migratory Species to develop for the consideration of the Conference of the Parties a joint work programme for the conventions, taking into consideration the note by the Executive Secretary on possible elements for a work programme between the secretariat of the Convention on Biological Diversity and the secretariat of the Convention on Migratory Species of Wild Animals (UNEP/CBD/SBSTTA/6/12/Add.1) and other materials already prepared, incorporating matters related to collaboration and implementation at all levels, including Parties, national focal points, Governments and intergovernmental and non-governmental organizations. The joint work programme shall also include priority areas for action, time-frames, key actors, mechanisms and financial considerations.

VI/9. Global Biodiversity Outlook

The Subsidiary Body on Scientific, Technical and Technological Advice,

Recalling its recommendation I/6 and decision II/1 of the Conference of the Parties, in which the Secretariat was requested to prepare, under the guidance of the Bureau of the Conference of the Parties and the Subsidiary Body on Scientific, Technical and Technological Advice, a periodic report on biological diversity,

Noting the draft of the first *Global Biodiversity Outlook* prepared by the Secretariat and made available at the sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice for review by Parties and other participants,

Acknowledging with appreciation the assistance with the preparation of this draft provided by the members of the Advisory Group established by the Executive Secretary,

Requests Parties and other participants to provide the Executive Secretary with any comments they may have on the draft by 30 April 2001 in order to allow the Secretariat to proceed with the completion and publication of the first *Global Biodiversity Outlook* in time for the seventh meeting of the Subsidiary Body on Scientific, Technical and Technological Advice.